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  The test installations validated the ISR in meeting its design objectives for their use. NIACOM response to the ISR was mixed. Generally the MACOMs supported testing the ISR further to validate the cost factors and C-Rating algorithms prior to using data in the budgeting process. They support further testing also to validate improved facility standards and to identify efficient uses of the data at MACOM and DA level.
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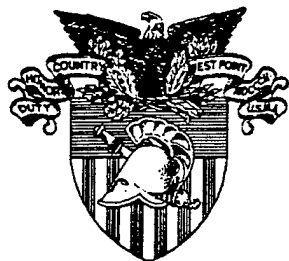
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**Installation Status Report
Part I - Infrastructure
Field Test
After Action Report**

Operations Research Center, USMA

Office of the Assistant Secretary of the Army

(Financial Management)

18 November 1993

Installation Status Report
Part I - Infrastructure
Field Test
After Action Report

Prepared by

Operations Research Center (ORCEN), USMA
Office of the Assistant Secretary of the Army (Financial Management)
(OASA(FM))
Office of the Assistant Chief of Staff, Installation Management (OACSIM)
Cost and Economic Analysis Center (USACEAC)
Center for Public Works (CPW)
Richardson and Kirmse Engineering, Incorporated (R & K Engr.)

18 November 1993

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Executive Summary

Part I- Infrastructure of the Installation Status Report (ISR) was field tested at 11 CONUS installations in July-August 1993. The test was very successful in identifying the strengths and weaknesses of the ISR as a decision support system. The test results have been briefed to all levels of the Army leadership, to include the CSA. General Sullivan was enthusiastic about the potential of the ISR as a Commander's tool to assist infrastructure related decisions made at all levels of the Army. He approved a plan to retest Part I in Feb-Apr 94 at the original test sites, along with some additional installations, to validate the system improvements made since the first test. Part II - Environment will also be tested during this time frame at these same installations.

The test installations validated the ISR in meeting its design objectives for their use. MACOM response to the ISR was mixed. Generally the MACOMs supported testing the ISR further to validate the cost factors and C-Rating algorithms prior to using data in the budgeting process. They support further testing also to validate improved facility standards and to identify efficient uses of the data at MACOM and DA level.

This report presents summaries of much of the ISR test data. **This test data should not be used in decision making and presentations of it in this report are clearly marked as "For Test Purposes Only"**. Cost factors, C-Rating algorithms, facility requirements and assets data, and facility standards from which this data was generated are all being refined to improve the overall ISR system. Test results support that this data will be very useful to decision makers however the accuracy of the test data is questionable until system enhancements are completed.

Each of the **major ISR issues** raised by the test installations and MACOMs has been addressed through system enhancements:

    1. **C-Rating algorithms** proved too stringent and, in some cases, did not present an accurate picture of infrastructure conditions. These algorithms need to identify the true problem areas as C-4 and the areas not needing attention as C-1. The constraints in these algorithms have been relaxed to present a more accurate assessment. There will be no weighting of infrastructure C-Ratings in the ISR. Data needs to be forwarded to MACOMs and DA in a pure state so decisions are made with installations on a "level playing field". Any weighting of ISR data can be done in follow-on decision support systems, such as the ACSIM's developing Decision Architecture, to assist in resource and policy decisions related to infrastructure.

    2. **Facility requirements and allowances** generated by the HQRPLANS system and the installation real property inventories (RPI) contained in the HQIFS system, which are used to build an installation's ISR database, are not 100% accurate. In the next ISR test, installations will be able to direct edit their ISR database to correct problems. Long term, the ACSIM is instituting a streamlined process called FARA (Facilities Allowance & Analysis System) to enable installations to validate, and MACOMs to approve, the allowances generated by HQRPLANS. Future ISR iterations will also use an installation's most current RPI database as the ISR asset database of record.

    3. Many of the **facility standards** focused too much on "cosmetics" and not functionality. AMC installations highlighted this problem particularly in the production and maintenance facility standards. All comments received from the field were provided to the functional proponents on the HQDA staff who developed the standards and they have incorporated needed changes. Standards refinement focused on assessing both the facility conditions and how well the building fulfills the function for which it is used. The expanded test

in Feb - Apr 94 will allow the original test installations to validate this critical component of the ISR system.

4. The test required **significant effort** on the part of some installation staff personnel. The burden can be attributed to the short test window given to installations, shortcomings of the ISR system, and the learning curve involved in this new way of doing business. Several software enhancements are geared towards reducing staff effort. A training tape will be provided in the future for installations to use in training facility inspectors. The ACSIM is studying how to streamline and/or eliminate current reporting systems, such as the Unconstrained Requirements Report (URR), the Tri-Annual Inspection requirement and the Installation Commanders Annual Real Property Utilization Survey (ICARPUS), in order to reduce installation staff workload in other areas.

5. The **manual cost reports** required in the test ISR were difficult to complete. A separate software package is being developed to automate these reports for the next ISR test and implementing instructions will better explain report requirements.

6. Some **critical facilities,** particularly several training ranges, were left off the list of facilities to be evaluated in the ISR due to the configuration of these facility category groups (FCGs) in the HQIFS system. These FCGs have been realigned so these important facilities will be evaluated in future ISRs.

7. Some installations are concerned about a **lack of facilities to support mobilization and deployment missions,** thereby degrading their ability to act as power projection platforms. Non-permanent, "World War II" wood facilities, previously used to handle personnel surges during deployments/mobilizations, are being torn down with no allowances authorized to replace these facilities. Installations are concerned that future surges will leave them dependent on local economy sources to fulfill facility shortfalls. This is an Army policy issue that needs to be studied between the ACSIM and MACOMs to determine if additional facility allowances need to be authorized to support these missions. The ISR does not directly address this concern, however installations can edit their facility requirements to reflect these needs in the next ISR test.

The installations that prepared the most detailed reports, and apparently got the most cooperation from units and directorates, were those that organized a multi-functional team to execute the ISR. Generally, the installations that had the most difficulty in implementing the ISR were those that kept the report responsibility solely within the DEH/DPW realm. A very effective approach used by some installations was to make a G-3/DPT staff member the ISR POC to improve coordination among the many different units and organizations providing input. The real property manager and/or the master planner from the DEH/DPW, and a resource manager are also critical team members in ISR execution.

When refined with the system enhancements described in this report, Part I - Infrastructure will provide a comprehensive overview of installation conditions to all levels of the Army. As a Commander's tool, it will be an effective decision support system to assist installation, MACOM and DA level decision makers in allocating resources and prioritizing infrastructure programs. The expanded test in Feb - Apr 94 will focus on validating the system improvements and testing the whole process - from installation execution of the ISR, to aggregation and use of the data in decisions at MACOM level, to use of the data by the many components of the DA staff. Current "stovepipe" reports received at MACOM and HQDA level will be closely examined for utility, and streamlined or eliminated if possible, in light of data generated in the ISR. The CSA wants feedback directly from some test installation Commanders after this expanded test.

1. Installation Status Report (ISR) Test Background Information

Part I - Infrastructure of the ISR was field tested from 19 July - 31 August 1993. The following MACOMs & Installations participated in the test:

FORSCOM	TRADOC	AMC	MDW
Ft. Hood	Ft. Benning	Aberdeen Proving Grounds	Ft. Belvoir
Ft. Carson	Ft. Knox	Redstone Arsenal	
Ft. Riley	Ft. Gordon	Anniston Army Depot	
Ft. Campbell			

Prior to the field test, the ISR development team (OASA(FM), ORCEN, OACSIM, CEAC, CPW and R & K Engineering) conducted centralized training sessions for each of the test MACOMs and installations. The installation personnel who attended the training sessions became the ISR points of contact (POCs) at their respective installations. Training consisted of a 5 hour block of instruction covering the details of the ISR system to include hands-on training with the system software. These sessions built the foundation for an effective working relationship between the test installation POCs and the ISR development team that has continued to date.

At the conclusion of the training sessions, the test installations were issued six copies of the ISR package. This package consisted of:

- An Installation Commander's Guide to the ISR (Test Concept & Objectives);
- A Field Test Evaluation Survey;
- ISR Implementing Instructions (Draft Army Regulation);
- Facility Inspection Worksheets;
- Facility Standards Booklets;
- Automation package which included:
    * Program disks for the ISR main and the ISRS satellite programs;
    * Disks with installation-specific real property inventory data, current as of March 1993, downloaded from the Headquarters Integrated Facilities System (HQIFS). These disks also contained installation-specific facility requirements/allowances downloaded from the Headquarters Real Property and Planning Analysis System (HQRPLANS).
    * List of facilities to be inspected by each installation;
    * Gummed labels with facility identification information for use on inspection worksheets;
    * Software User's Manual.

During the field test period, OASA(FM) produced a weekly newsletter of issues that had been surfaced by the various test sites. These weekly newsletters, which were faxed on Fridays to each test installation POC, provided an excellent forum for sharing of ideas, concerns and problem solutions. This process surfaced some of the major issues requiring attention along with some initial problem solution methods. **One lesson learned is that any HQDA or MACOM agency that conducts field tests of similar initiatives would benefit from using this type of newsletter process.**

The ISR development team conducted after action reviews (AARs) at each test site to identify how the installation task organized to accomplish the mission, the major problems encountered and the positive aspects of the ISR. The format for the AARs was a round table discussion with the key ISR players followed by a session with the installation commander, chief of staff and/or the garrison commander. These sessions provided valuable information on the major issues needing attention along with suggested direction for solutions.

The test window proved too short for the majority of the installations to conduct a thorough implementation and analysis of the ISR. **Installations need adequate time, minimum of 90 days, to prepare for and execute a mission of this nature.** Installations spent a lot of time initially sorting ISR information, preparing worksheets and standards booklets for distribution, and training/coordinating with inspectors. Due to the short test time frame, some installations only inspected selected facilities, choosing them using a random sampling plan. Limited time hindered POCs in establishing submission and quality control channels for completed inspection worksheets. **In future tests of initiatives of this scope, test sites should be provided detailed warning orders a minimum of 90 days prior to start date and the test window should be 60 days long.**

The ISR field test was successful in identifying the strengths, weaknesses and needed system improvements to make the ISR an effective decision support system. Significant effort by the installation POCs, MACOM POCs and the ISR development team has improved the ISR as a tool for infrastructure management.

2. Test Objectives Evaluation

The primary objective of the field test was to validate the ISR prototype as an effective tool for infrastructure management. Validating of the ISR focused on measuring the extent to which the system met these design objectives:

ISR OBJECTIVES (Installations)

Provide the installation commander a decision support system that:

1. assesses installation <u>conditions</u>
2. uses HQDA established Army-wide <u>standards</u>
3. articulates installation <u>needs</u>
4. estimates installation requirements for sustainment/renewal <u>resources</u>
5. assists in prioritizing <u>projects</u>
6. assists in allocation of <u>resources</u>
7. measures <u>progress</u>

ISR OBJECTIVES (MACOM AND HQDA)

1. Provide a current status to MACOMs and HQDA of the conditions of Army installations.
2. Provide indicators to MACOMs and HQDA that:
   a. represent Army-wide facility conditions and trends;
   b. identify areas which degrade installation conditions;
   c. identify the shortfalls on installations between existing and required facilities;
   d. identify the difference between the actual condition of facilities on installations and Army-wide standards;
   e. identify mitigating factors that impact facility requirements and conditions.
3. Assist HQDA, MACOMs and installation commanders in allocating resources and prioritizing programs to upgrade installation conditions.
4. Assist MACOMs and HQDA with information for determining changes in Army policy or in determining needs for new policies.
5. Assist HQDA with information for use with Total Army Basing Study (TABS); Base Closure and Realignment (BRAC); Counter Stationing and Force Structure decisions).

CUSTOMER SURVEY

One method used for evaluating how well the ISR met its design objectives was a feedback survey. Each test installation and MACOM was asked to complete a "customer" feedback survey designed based on Total Quality Management (TQM) concepts. The remainder of this chapter will present survey results and conclusions.

2.1 Installation Objectives Survey Analysis

This feedback survey evaluated objectives 1 and 2 through a series of questions, while one question assessed each of objectives 3 through 7. The installations also provided feedback on other facets of the ISR system. The answer format for each of the survey questions was:

1	2	3	4	5	6
Strongly disagree	disagree	no opinion	agree	strongly agree	not applicable

The survey requested explanations of any strongly disagree or disagree responses, along with suggestions for improvement. Since the sample population is small (11 survey results), the raw data of response frequency gives the best picture of how well the ISR met its objectives.

OBJECTIVE #1 - ISR Assesses Installation Conditions.

The installations responded to ten questions in evaluating this objective. The questions assessed whether the ISR captures installation infrastructure correctly in the current delineation of areas, categories and sub-categories. This graph depicts the responses from all installations to the ten questions:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 10 questions each assessing this objective).
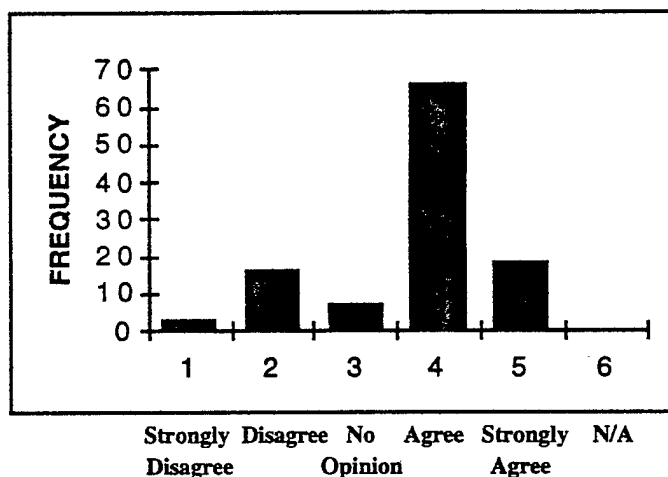
The survey responses support the conclusion that the ISR does assess installation conditions.

OBJECTIVE #2 - ISR Establishes Army Wide Standards.

The installations responded to twenty-three questions in evaluating this objective. The questions assessed whether the standards used in each infrastructure category are reasonably simple to use, yet valid. This graph depicts the responses to all twenty-three questions:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 23 questions each assessing this objective).

OBJECTIVE 2

FREQUENCY

150
100
50
0

1 2 3 4 5 6

Strongly Disagree No Agree Strongly N/A
Disagree Opinion Agree
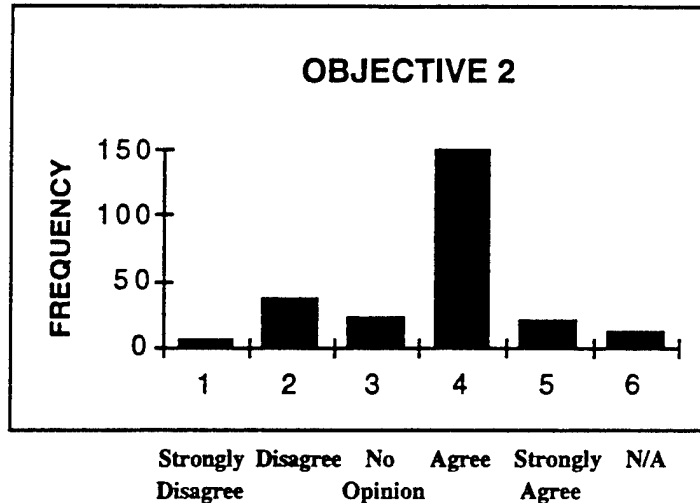
These responses strongly support the conclusion that the ISR standards are relatively simple to use, yet valid. Specific concerns regarding the standards have been incorporated into the revised facility standards. (See chapter 6.3 Facility Standards Improvement).

OBJECTIVE #3 - ISR Articulates Installation Needs.

The installations responded to one question in evaluating this objective. The question assessed if, overall, the ISR is an effective means for describing the needed improvements to the infrastructure on an installation. This graph depicts the responses to the question:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 1 question assessing this objective).

OBJECTIVE 3

FREQUENCY

6
4
2
0

1 2 3 4 5 6

Strongly Disagree No Agree Strongly N/A
Disagree Opinion Agree
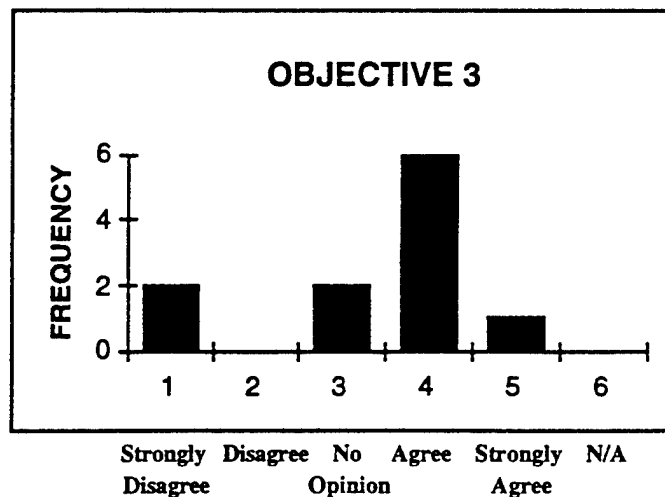
The majority of the test installations (7 of 11) support that the ISR is an effective means for describing the needed improvements to the infrastructure on an installation.

OBJECTIVE #4 - ISR Estimates Resources.

The installations responded to one question which assessed if the ISR could effectively (although not precisely) articulate resource requirements to correct infrastructure shortcomings. This graph depicts the responses to the question:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 1 question assessing this objective).


The majority of the test installations (7 of 11) support that the ISR could effectively (although not precisely) articulate resource requirements to correct infrastructure shortcomings.

OBJECTIVE #5- ISR Assists in Prioritizing Projects.

One question assessed if the ISR could assist in prioritizing projects and/or programs at the installation level. This graph depicts the responses:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 1 question assessing this objective).

The installations provided mixed feedback on this objective. Six agreed the ISR could assist in prioritizing programs and projects while 4 disagreed. Some installations felt the ISR could assist in the Master Planning Process. Future decision support uses of the ISR should demonstrate its utility in prioritizing programs and projects.

OBJECTIVE #6- ISR Assists in Allocating Resources.

The installations responded to one question which assessed if the ISR could assist in allocating resources at the installation level. This graph depicts the responses to the question:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 1 question assessing this objective).
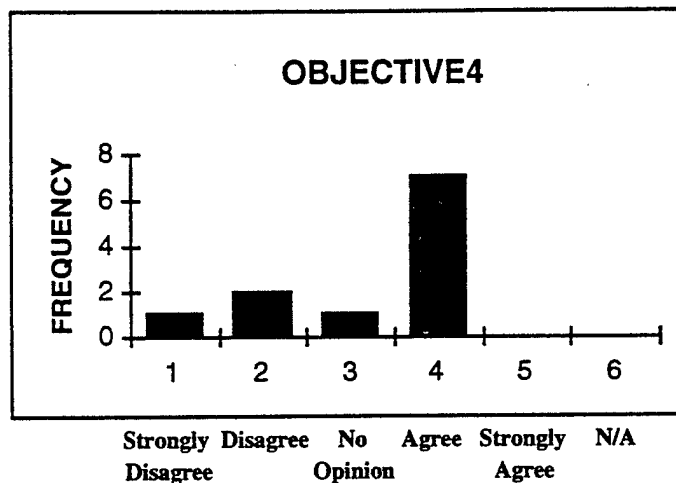
OBJECTIVE 6

(Bar chart: FREQUENCY on vertical axis (0 to 6), horizontal axis 1–6)

Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree | N/A
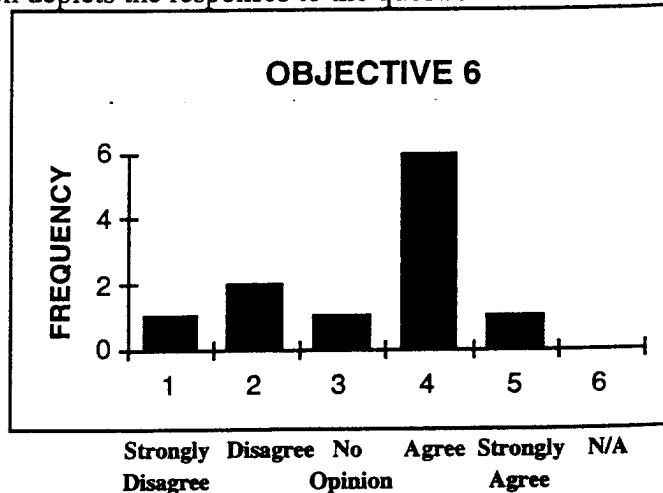
The installations supported the ISR in meeting this objective. Seven agreed the ISR could assist in allocating resources while 3 disagreed. The ISR can give Commanders a picture of where their true infrastructure problems are and, thus, lead to resource decisions to correct these shortcomings.

OBJECTIVE #7 - ISR Measures Progress Towards Infrastructure Improvements

One question assessed if the ISR provides a measure for evaluating infrastructure improvement. This part of the ISR system was not exercised during the test because it measures how installations use resources allocated to them based on previous ISRs. The survey results are, therefore, not based on actual use of these reports. This graph depicts the responses:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 1 question assessing this objective).
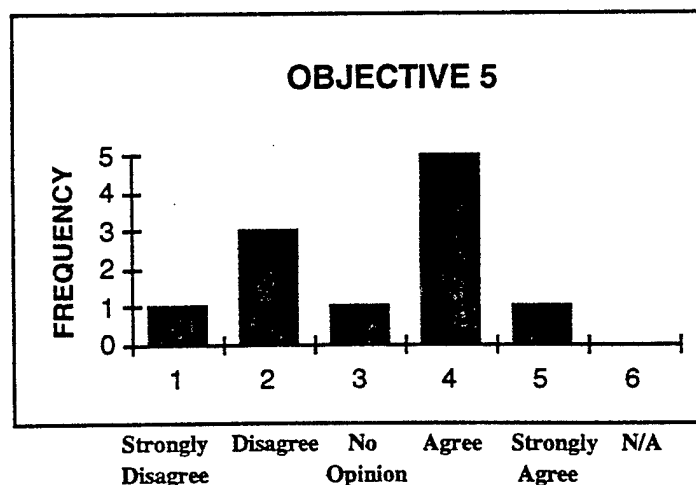
OBJECTIVE 7

(Bar chart: FREQUENCY on vertical axis (0 to 8), horizontal axis 1–6)

Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree | N/A
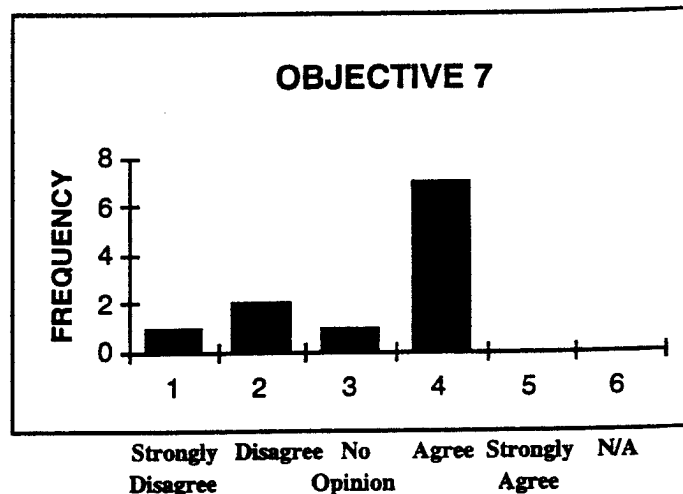
Seven of the installations believed the ISR method for measuring progress will be adequate.

C-RATING ALGORITHM EVALUATION

C-Rating algorithms are a critical area of the ISR system. The installations were asked one question assessing whether the algorithms for combining quantity and quality into C-Ratings are appropriate. This graph depicts the responses:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 1 question assessing this objective).

OTHER KEY QUESTIONS (#4)

FREQUENCY

| | Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree | N/A |
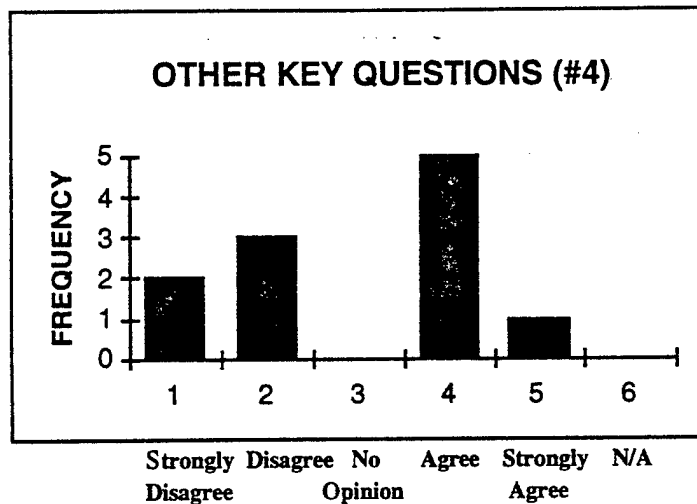
The installation response was mixed. Six supported the current algorithms while 5 installations believed they need improvement. Based on this feedback, the C-Rating algorithms are being adjusted prior to the next test of the ISR. Detailed discussion of the C-Rating algorithms is contained in Chapter 3.

SOFTWARE EVALUATION

One survey question asked the installations to assess the user-friendliness of the ISR system. This question basically evaluated the ISR software package. This graph depicts the responses:

The horizontal axis shows the response categories: Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree, Not Applicable. The vertical axis depicts the total number of survey responses (11 surveys with 1 question assessing this objective).

OTHER KEY QUESTIONS (#7)

FREQUENCY

| | Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree | N/A |
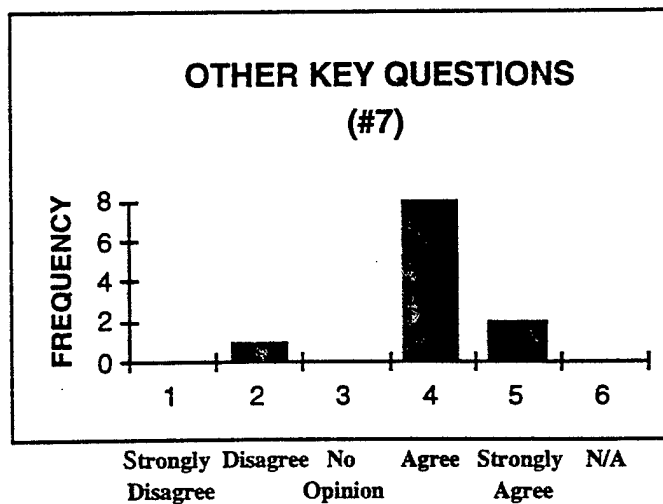
The survey results show the ISR software package is user friendly. Test installations provided some specific suggestions for further improvement that are being incorporated into the next version of the software.

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The overall installation survey feedback validates the current ISR in meeting the project objectives. These results confirmed some of concerns, and reinforced the positive aspects, about the current system

2.2 MACOM Objectives Survey Analysis

Each of the four test MACOMs was asked to complete a feedback survey designed to assess if the ISR met its design objectives. Three of the MACOMs competed the survey; one provided a memorandum detailing the MACOM's assessment of the ISR in each of the objectives. This section provides the feedback results, incorporating both the returned surveys and the detailed memorandum feedback.

Objective #1: ISR Provides current status of installation conditions to MACOMs and HQDA.

Two survey questions assessed this objective. One MACOM believed the ISR met this objective while 3 did not. The main MACOM concerns raised in the surveys under this objective were:

a. The facility standards focused too much on "cosmetics" rather than functionality of facilities, hence the ISR did not provide an accurate picture of installation conditions.

b. The cost figures generated by the ISR need to be audited prior to determining whether they truly reflect the costs to improve installation conditions.

c. The ISR use of RPLANS generated requirements led to some inaccurate C-Ratings because the installations have not validated these facility requirements. Hence, the generated C-ratings do not necessarily present an accurate picture of installation conditions.

d. AMC believes that production facilities need to carry more weight in the C-Rating calculations in order to produce an accurate picture of their installation conditions.

Objective #2a: ISR provides indicators that represent Army wide conditions and trends.

Two questions assessed whether the seven ISR infrastructure areas capture the correct facilities for measuring installation infrastructure conditions. Three MACOMs believed the ISR met this objective while one MACOM disagreed. The concern in this objective was the facility standards. The ISR will better meet this objective in the future as standards are now refined to incorporate facility functionality.

Objective #2b: ISR identifies areas which degrade installation conditions.

The survey asked eight questions under this objective to evaluate if the ISR measured the correct infrastructure categories under each area to assess installation conditions. The survey results supported that the ISR met this objective, however the MACOMs did raise some concerns:

a. Airfield and Port facilities need more detailed inspections.

b. Utility Systems need to be further broken out in order to give a more accurate facility assessment.

c. The Reserve and National Guard Areas need further definition.

Objective #2c: ISR identifies the shortfall between existing and required facilities.

One survey question assessed if the ISR met this objective. The MACOM response was split - 2 agreed the ISR meets this objective while 2 disagreed. The main MACOM concerns were:
a. The facility requirements generated by the RPLANs database do not necessary reflect true installation needs. In particular, AMC believes the RPLANS database does not properly address the uniqueness of their installations. Hence, the shortfalls identified are not accurate in some cases.

b. The shortfalls identified by the ISR are only as accurate as the installation's real property inventory database. Many RPI databases needed updating at the time of the test.

c. Some key facilities were not included in the ISR evaluation due to a database configuration problem. Without evaluating these facilities, the ISR does not identify some critical facility shortfalls. This error was partially corrected during the test and has been fully corrected in the refined ISR.

Objective #2d: ISR identifies differences between conditions and Army wide standards.

This objective evaluates the quality of the facility standards. The survey asked twenty-three questions assessing if the facility standards in each category are reasonably simple to use, yet valid. The survey results are hard to evaluate in this objective because one MACOM provided just a blanket disagreement statement instead of providing assessments of the standards in each of the 23 categories. Overall, the MACOM response was basically mixed - 2 agreeing the ISR met this objective while 2 disagreed. The main concerns were:

a. Standards need to better address facility functionality.

b. Port facility and Utility Systems standards need more detail. Kitchens should be a critical item in the Housing standards.

c. Training range standards do not assess missile ranges or proving grounds. Production and maintenance facility standards are not adequate and ammunition storage igloo standards need work.

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Objective #2e: ISR can be used to identify mitigating factors (environment, health, safety, preservation) that impact infrastructure conditions.

One survey question assessed this objective. The MACOM response was split - 2 agreed while 2 disagreed. There is a section on each inspection worksheet allowing facility inspectors to identify any E,H,S,P concerns. During the test this section was seldom used. We will improve the implementing instructions in this area and environmental concerns should be captured in Part II - Environment of the ISR.

Objective #3: ISR assists HQDA, MACOMs and installation commanders in allocating resources and prioritizing programs to upgrade installation conditions.

The MACOMs supported that the ISR could assist commanders in prioritizing programs, however 2 MACOMs believed the ISR needs improvement before it can be used in allocating resources. The concern raised regarding resource allocation was that the cost factors and C-rating algorithms used in generating the sustainment and improvement cost estimates need to be validated. Most MACOMs want the cost factors validated before any ISR generated estimates are used in the budgeting process.

Objective #4: Provides MACOMs and HQDA with information useful in setting policy.

This objective was assessed with one survey question. The MACOMs agreed that the ISR does provide information that can be used in policy setting.

Objective #5: Provides information for use with Total Army Basing Study (TABS); BRAC; Army Strategic Mobility Planning and other management or policy decisions.

The MACOMs were split in their responses to the one survey question under this objective. Two MACOMs strongly believed the ISR needs refinement before it is used by these other planning systems.

2.3 Conclusions from Survey Results

Overall, the installation survey results validate the ISR in meeting the project design objectives. The MACOMs indicated they have several concerns about the test ISR system. Both the installation and MACOM survey responses reinforce the concerns raised during test after action reviews. These concerns, along with the system enhancements to address these concerns, are detailed in Chapter 6.

3. C-Rating System Evaluation

The C-Rating algorithms are a critical component of the ISR system. These algorithms lead to the infrastructure sub-category, category, area and installation ratings generated by the ISR software. The C-Ratings also directly impact the sustainment and improvement costs generated by the system. The sustainment costs reflect an estimated cost to maintain infrastructure conditions at the current C-Rating. The estimated renovation costs project the cost to improve the quality of current facilities to a C-1 condition. The software also provides estimated new construction costs to fulfill the facility quantity shortfalls needed to bring infrastructure conditions to a C-1 status. Many components of the ISR system rely on the C-Rating algorithms.

3.1 Test C-Rating Process

Early in the concept development process, the C-Rating definitions were set as follows:

C-level definitions
C-level: C-1 **DEFINITION:** All required facilities available Meets unit/activity needs and Army standards No functional deficiencies Infrastructure fully supports and enhances mission performance No significant environmental, health, safety, or preservation (EHSP) issues
C-level: C-2 **DEFINITION:** Most required facilities available Meets unit/activity needs and partially meets Army standards Minor functional deficiencies Infrastructure supports majority of assigned missions Minor environmental, health, safety, or preservation (EHSP) issues
C-level: C-3 **DEFINITION:** Most required facilities available Meets majority of unit/activity needs, however, does not meet Army standards Minor functional deficiencies Impairs mission performance Minor environmental, health, safety, or preservation (EHSP) issues
C-level: C-4 **DEFINITION:** More facilities required Does not meet unit/activity needs or Army standards Major functional deficiencies Significantly impairs mission performance Major environmental, health, safety, or preservation (EHSP) issues
C-level: C-5 **DEFINITION:** Undergoing major reorganization Newly activated/inactivated installation or base closure ongoing

The test C-Rating algorithms follow from these definitions and are rather stringent. The process used during the test is summarized by the flowchart diagrammed below:

Facility Category Group (FCG) Level:

C-Rating for Quality
(% of Facilities within the FCG)

C-Rating for Quantity
(% of Facility Requirement Satisfied)

C-1 : % of Facilities GREEN = 100%
C-2 : % of Facilities GREEN+AMBER = 100%
C-3 : % of Facilities GREEN+AMBER > 50%
C-4 : % of Facilities RED $\geq$ 50%

C-1 : 100% or greater
C-2 : 85% to 99%
C-3 : 70% to 84%
C-4 : Less than 70%

Sub-Category Level:

C-Rating for Quality

Simple Average of the FCG C-Ratings
Comprising the Sub-Category

C-Rating for Quantity

Simple Average of the FCG C-Ratings
Comprising the Sub-Category

Overall Sub-Category C-Rating is the **LOWER**
of the Quality & Quantity C-Ratings

Category Level
Simple Average of the Sub-Category
C-Ratings Comprising the Category

Area Level
Simple Average of the Category
C-Ratings Comprising the Area

Installation Level
Simple Average of the Area C-Ratings

These algorithms led to many C-2 and C-3 ratings at the Area and Installation Level due mainly to the simple averaging process.

Presently, we have no plan for using weighted averages in the C-Rating process. Since there are varied missions across MACOMs, the importance of individual infrastructure areas differs between installations. The ISR data can be most useful if the C-ratings are not weighted since it allows decision makers to look across installations knowing the C-Ratings were determined using the same Army-wide facility standards and algorithm process. MACOMs and HQDA may want to weight infrastructure ratings when using ISR data with further decision support systems. At HQDA level, the ACSIM's developing Decision Architecture System may weight future ISR data in modeling infrastructure resource decisions.

3.2 Quality C-Rating Algorithms

At the FCG level (the lowest level of C-Ratings generated) the test reported Quality ratings were spread across all 4 ratings. Using test data from 8 of 11 installations, the spread of FCG Quality ratings from C-1 through C-4 were:

C-1 = 20%, C-2 = 39%, C-3 = 22% , C-4 = 19%
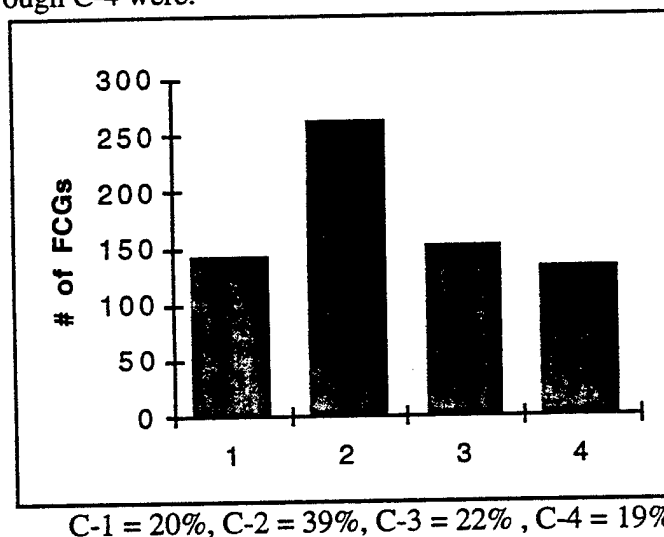
This chart represents 677 reported FCGs. The high number of C-2 ratings is due to the many FCGs reported as having 100% of the facilities in Amber condition. The concern with the current Quality C-Rating standards is the lack of any tolerance for red facilities in the C-1 or C-2 ratings. The highest Quality rating an FCG with red facilities can attain is C-3. For example, an FCG with 100 facilities would be C-3 if 99 facilities are in Green condition while 1 is Red.

Conceptually, the C-Ratings algorithms should identify where the installation's true problems are (C-4) and what facility conditions do not need immediate attention (C-1). The current C-4 standard of more than 50% of facilities within the FCG in Red condition does identify true quality problem areas. However, the C-1 and C-2 standards are too stringent. We have adjusted the Quality C-Rating algorithm to allow for some Red tolerance in C-1 and C-2. Ideally, the C-Ratings should be based on a dual constraint concept of a minimum Green and maximum Red standard. Software limitations currently preclude this so the **new standards for FCG Quality C-Ratings are:**

C-1: % of **Green** facilities within the FCG $\geq 90\%$
C-2: % of **Green + Amber** facilities w/in the FCG $\geq 90\%$
C-3: % of **Green + Amber** facilities w/in the FCG $\geq 50\%$
C-4: % of **Red** facilities w/in the FCG $\geq 50\%$

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Applying this algorithm to the test reported FCG data, the quality ratings would be:

C-1 = 22%, C-2 = 41%, C-3 = 18%, C-4 = 19%.
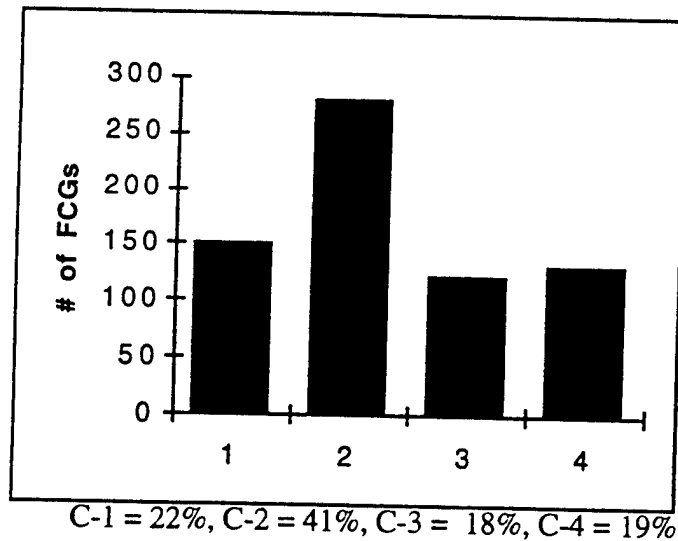
The percentage of C-1 and C-2 ratings increases slightly, while the C-3 ratings drop, due to the tolerance for some Red condition facilities at the higher ratings. Note that the number of C-2 ratings will continue to be high if several FCGs are reported as having 100% Amber condition facilities. This does not appear to change ratings significantly, however these algorithms should better highlight true facility quality problems and strengths.

3.3 Quantity C-Rating Algorithms

The accuracy of the test generated FCG quantity C-ratings is questionable since they rely on the accuracy of both the HQRPLANS and the installation's real property inventory databases. Two observations made during the test are:

    a. Installations generally have not validated the facility allowances / requirements generated by HQRPLANS; and

    b. The real property inventory data in the HQIFS system, which was loaded in the ISR software, was somewhat inaccurate for most of the test installations.

We performed the same analysis on the reported FCG quantity C-Ratings as discussed above in the quality C-Rating section. The reported quantity C-Ratings were grouped at both ends of the rating scale:
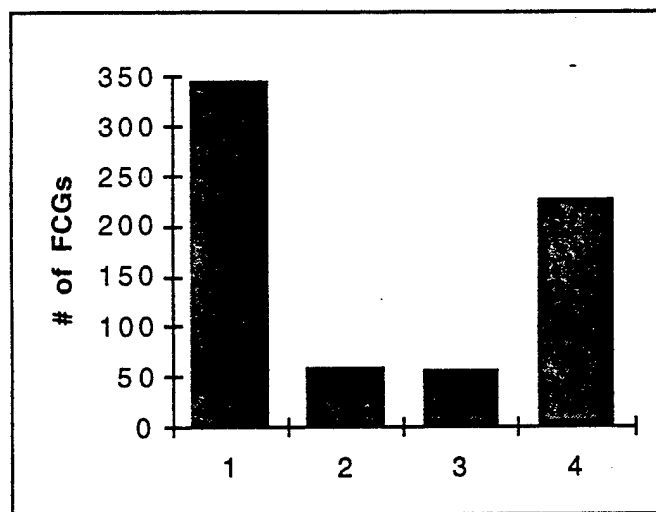
C-1 = 51%, C-2 = 8%, C-3 = 8%, C-4 = 33%.

These ratings are based on the percent of facility allowance (determined by HQRPLANS) satisfied by on-hand assets (recorded in the HQIFS database from an installation's real property inventory). In over half the FCGs reported, installations had more facilities than their allowance while 1/3 of the FCGs had less than 70%. This data highlights the inaccuracies in both the HQIFS and HQRPLANS databases.

Applying the same conceptual thought process from the quality algorithms that a C-4 should indicate real problems while a C-1 should indicate areas not needing attention, we need to add slack to the current standards. **The new FCG quantity C-Rating algorithms are:**

C-1: % Allowance Satisfied w/in the FCG $\geq 95\%$
C-2: $95\% >$ % Allowance Satisfied w/in the FCG $\geq 80\%$
C-3: $80\% >$ % Allowance Satisfied w/in the FCG $\geq 60\%$
C-4: % Allowance Satisfied w/in the FCG $< 60\%$

Using these algorithms on the test FCG data from 8 of 11 installations, the spread of ratings is:

C-1 = 54%, C-2 = 9%, C-3 = 8%, C-4 = 29%

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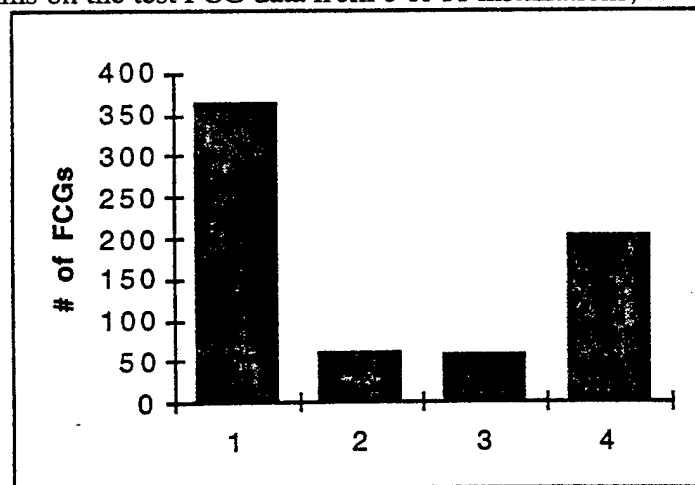
The spread of C-Ratings does not change much due to the database problems so the impact of these new algorithms is hard to judge. However, these algorithms should better highlight the facility quantity problems on an installation, both in terms of excess and shortage of facilities.

4. ISR Data Analysis

Data produced by the Installation Status Report (ISR) test has been analyzed to determine what facility status indicators are apparent, and how this type of information can be used by DA and MACOM decision makers. **Care should be taken not to attribute too much significance to potential facility problem areas, as ISR facility standards and facility requirements are still being refined.**

4.1 Installation and Area C-Rating Summary

Appendix B is a summary report of Area and Installation C-Ratings for the 11 test sites. Note that of the 77 Area ratings (7 Areas at 11 installations), Commanders upgraded 16 of the calculated ratings. The Area ratings result from averaging C-Ratings at three subordinate levels of facilities, and therefore tend to produce primarily C-2 and C-3 ratings with a few C4's.

4.2 Sub-Category C-Rating Summary

Appendix C is a summary report of Sub-Category C-Ratings for the test installations. These Sub-Category ratings are the result of averaging only one subordinate level of facilities, and therefore tend to produce a wider spread of C-Ratings (several C-1s and C-4s). These C-Ratings are useful in identifying potential infrastructure problem areas. Some potential problem areas highlighted by test data are:

General Purpose Instruction Facilities where there are 6 C-4s.

Applied Instruction Facilities where there are 7 C-4s.

Barracks where there are 6 C-4s.

Child Development Centers where there are all C-4s.

4.3 General Purpose Instruction Facilities Sub-Category

Appendix D is a summary report of General Purpose Instruction Facilities. This shows that of the 6 C-4s reported, 4 were the result of the installation having much less than the required quantity of facilities, 1 was the result of the installation having facilities in poor condition, and 1 was the result of the installation having much less than the required facilities and having those facilities on-hand in poor condition.

4.4 Applied Instruction Facilities Sub-Category

Appendix E is a summary report of Applied Instruction Facilities . This shows that of the 7 C-4s reported, 6 were the result of the installation having much less than the required quantity of facilities, and 1 was the result of the installation having facilities in poor condition.

4.5 Barracks Sub-Category

Appendix F is a summary report of <u>Barracks</u>. This shows that of the 6 4-Cs reported, only 1 was the result of the installation having much less than the required quantity of facilities,
4 were the result of the installation having facilities in poor condition, and 1 was the result of the installation having much less than the required facilities and having those facilities on-hand in poor condition. **This is an indicator of a real potential problem.**

4.6 Child Development Centers Sub-Category

Appendix G is a Summary Report of <u>Child Development Centers Facilities</u>. This shows that of the 11 C-4s reported, all were the result of the installation having much less than the required quantity of these facilities. Some installation commanders indicated that the facilities requirements for Child Development Centers are too high and that these C-4s are not valid assessments of their installation's status. Facilities requirements in HQRPLANS are being adjusted to correctly reflect installation needs for the next phase of ISR fielding.

5. Cost Factor Analysis

The ground rules used for cost factor development were to maintain simplicity, to ensure accuracy at the macro level, to avoid labor intensive methodology and to keep the budget level detailed cost estimates intact. The ISR methodology is not intended to replace the normal budget or POM processes.

Three types of costs are estimated by the ISR: New Construction, Renovation and Sustainment. The test installations were required to submit a manually generated report called the Installation Sustainment and Capital Cost Report. This report provides the installation's estimated sustainment costs to maintain their current overall C-Rating over a 5 year period. The estimated renovation costs, spread over a 5 year period, to improve the quality of their current facilities in each infrastructure area to a C-1 rating is listed under the RPMA portion of this report. The estimated new construction costs, spread over a 5 year period and the outyears, to fulfill facility quantity shortfalls in each area are listed under the MILCON section of the report.
The Installation Sustainment and Capital Costs Report for 9 of the test installations are provided in Appendix H.

5.1 New Construction Factors

New construction costs (LUCF) for each FCG were estimated using Corps of Engineer new construction rates (UCF). The UCFs were analyzed and validated by USACEAC prior to use. These were expanded to tailor the costs for inflation (INF), technology (TAF), reliability of data (CDRF), construction contingency (CONTF), supervision and administration (S&AF) and support facilities (SFF). A $10 per unit measure factor was added for site preparation and demolition for those factors that had a unit of measure (UM) in square feet. The algorithm therefore looks like:

$$LUCF - (UCF \times INF \times TAF \times CDRF \times CONTF \times S\&AF \times SFF) + (\$10 \times UM)$$

5.2 Renovation Factors

The renovation cost factors presented the greatest challenge. No data existed that tied the renovation costs to the ISR facility quality color codes (Red, Amber or Green). These factors were initially developed using cost and measurement data from the Engineer CAPCES data base to yield Amber and Red cost factors. After the costs were normalized into the same year dollars they were paired into upper and lower groups. Each group was then separated into FCGs and a sample mean was calculated for each. The costs were divided by the unit of measure to produce cost factors. These were the factors used in the test and they were accurate at the macro or Army-wide level.

After the test, the cost factors calibrated by two different analytical groups using different sets of data. One group estimated the costs to raise each FCG from an Amber or Red condition to Green and adjusted the cost factors. The other group used a work order data base (different than the CAPCES data base) for calibration. The overall factors from each calibration technique were identical to the third significant figure. Future cost factors will be updated with actual work order data tied to the ISR inspection color coding. Moving averages can be used to smooth the cost factors and improve their accuracy.

5.3 Sustainment Factors

The sustainment cost factors for buildings were extracted from the Engineer Maintenance and Repair Planning Model (MRPM). They were validated for accuracy and used because they represented requirements or Should-Cost factors. Cost factors were calculated using the Engineer Red Book where other data was not available. These cost factors will be adjusted with actual expenditures in the future.

5.4 Appropriation Breakout

The test revealed that the field was having difficulty in breaking out the overall costs into appropriations. When the ISR is fielded, it will be possible to break out appropriations based on Unit Identification Codes (UIC). All three categories of costs will be identified to the proper appropriation. Even renovation cost factors will be split between Real Property Maintenance Activity (RPMA) and Military Construction (MILCON). When the ISR moves into Phase III (Services), the appropriation split will be critical to the costing process. USACEAC is already working on ways to do this and beginning on the development of these cost factors.

5.5 Conclusions / Concerns

The above methodology provides the ISR a set of macro cost factors that are accurate at DA level. They can be used for planning and programming at the installation, MACOM and DA levels. The cost factors will mature as the ISR matures. They need to be updated annually to reflect the current status of the Army. They can eventually be used for programming and budgeting at installation and MACOM level in addition to HQDA level. New factors need to be developed when the ISR is implemented OCONUS. If the facility standards change significantly, cost factors will need to be revalidated for the new condition standards.

6. Major Test Issues

Several major issues were identified during the field test. A major issue is a concern that affected or arose at a majority of the test installations. This chapter outlines these issues and the ISR system improvements that are being made prior to further implementation.

6.1 Facility Requirements and Real Property Inventory (RPI) Databases.

ISSUE: Several of the facility allowances / requirements generated by the HQRPLANS system do not match installation needs. Also, the RPI asset data in HQIFS used to build the ISR software database was not 100% accurate for most of the test installations.

ANALYSIS: During the test, several of the installations questioned the quantity C-Ratings being generated by the software. There were two problems affecting the inaccurate quantity C-Ratings. First, installations did not agree with some of the facility requirements / allowances that make up the denominator of the quantity C-Rating algorithm. Second, some of the real property asset data (the algorithm numerator) in the ISR software was not accurate according to the test sites.

The facility requirements / allowances in the ISR software are generated by generic algorithms in the HQRPLANS system. In some cases, installations said these requirements were too high causing the quantity C-Ratings at FCG and sub-category level to be artificially low. Since the sub-category C-rating that is carried forward is the lower of the quantity and quality ratings, these artificially low ratings were rolled up to category and area level. However, looking at the test data from 8 of the 11 installations, 51% of the reported FCGs had over 100% of the facility allowance satisfied by on-hand assets. This means that either the allowances are too low in many cases, or it is an indicator of excess facilities on installations. The bottom line is there is a disconnect between what installations believe their facility needs are and those reflected in HQRPLANS.

During AARs at the test installations two trends regarding facility allowances emerged. One, installation staff personnel did not understand how facility requirements / allowances were generated nor did they believe they had any input into how they were determined. Second, installations did not put much emphasis on understanding / validating these requirements because they did not believe many significant decisions were made using this data. The ISR test heightened awareness about the importance of HQRPLANS allowances and the need to validated these figures with installations.

Several installations complained about the accuracy of the real property asset data that was in the ISR software. This data was downloaded from the HQIFS system which is updated quarterly based on input from installations. Apparently, this update process sometimes takes 6-9 months. Two factors apparently contributed to this problem. First, the processing time from when an installation submits an RPI change, the change is approved at MACOM level then finally updated on the HQIFS database, takes too long. Second, many installations were behind in updating their real property inventory records.

One good example of a processing delay occurred just prior to a test AAR. The installation ISR POC stated that his MACOM had just phoned him to challenge an RPI change he had submitted two months prior. This kind of processing delay hurts the quality of the HQIFS database.

Several installations stated during AARs they were behind in updating RPI records due to manpower constraints and lack of emphasis. Many of the test installations were making hard decisions about where to best use their dwindling manpower resources. Since there was a belief at some installations that the data in HQIFS was not used to make significant decisions, the priority on updating records slipped. Also, one particular problem at many of the test sites was submitting paperwork to justify facility conversions / diversions. Several installations have changed the use of some excess facilities to make up for shortfalls in other facility types. Apparently, the bureaucratic paperwork process for getting these facility transactions approved is lengthy, hence many conversions / diversions are not approved and reflected in RPI records until well after the actual facility change has been implemented.

SOLUTION: In the short term, the solution is to allow installations to direct edit the databases that are given to them in the ISR software. Installations can edit the facility requirements / allowances that are fed into the software from HQRPLANS thereby providing the installations a capability to validate these requirements. Also, installations will be able to edit the assets data to make it more accurately reflect their current RPI records. However, this editing process will not take the place of the current RPI update process. Edits to the ISR assets database will not be reflected in HQIFS until they are submitted through the current process. Changes to the facility requirements / allowances will be evaluated by the ACSIM to determine how/if to update HQRPLANS. If an installation uses this edit capability, they need to coordinate any edits with their real property manager so updates can be forwarded to the MACOMs.

In the future, when the installation needs to complete an ISR, they will download their most current RPI database directly into the ISR software. To improve the installation's ability to validate facility requirements / allowances, the ACSIM is introducing a streamlined validation process called the Facilities Allowance & Requirements Analysis (FARA) process. This FARA process, which should be automated in the future, will allow MACOMs to quickly approve facility requirements and allowances changes submitted by installations.

6.2 C-Rating Link to Mission

ISSUE: In some cases, the current C-Ratings do not accurately link an installation's infrastructure status / priorities with mission.

ANALYSIS: Some test installations believed a few of the calculated C-Ratings did not accurately reflect their true infrastructure conditions. Further, installations felt the current ISR C-Ratings did not highlight the infrastructure areas that are most critical to an installation's ability to perform its required missions. For example, training ranges are critical to TRADOC installations while production facilities are critical to many AMC installations. The current ISR does not allow installations to weight these critical infrastructure areas in determining C-Ratings.

Several problems contribute to this issue. First, the ISR is designed to provide a macro picture of installation conditions to senior Army leadership, hence it attempts to capture information on the major infrastructure components on all type Army installations. It is not designed to gather information on every facility at each installation so the needs of some may not receive enough visibility in the ISR. Second, inaccurate C-Ratings generated due to the RPLANS and RPI database problems led some commanders to question C-Ratings in certain infrastructure areas. Third, the test facility standards did not emphasize functionality enough, particularly in the area of production and maintenance facilities, so some C-Ratings generated are not representative of the "mission capability" of the installation's infrastructure.

Several solutions have been considered in addressing this issue. One approach is to develop separate ISR reports for each major MACOM emphasizing their priority infrastructure areas.

The downside to this is the inability, at HQDA level, to put all installations on an "equal footing" when determining priority needs for infrastructure resources. Another approach is to let installations and/or MACOMs weight the infrastructure categories and areas to reflect their priority infrastructure needs. This poses the same problem with the ISR C-ratings not meaning the same thing as they are rolled up to higher headquarters. Also, a weighting method adds significant subjectivity to the ISR system, thereby again reducing its ability to put installations on the "same playing field" in terms of infrastructure assessment. Any weighting of ISR data should be done in follow -on decision support systems at MACOM and DA level.

SOLUTION: The best solution is to have the ISR address the proper infrastructure categories and areas to reflect an installation's true condition status and priorities. Further, the facility standards need to be a measure of how well infrastructure meets the needs for which it is being used (the facility's "mission"). Finally, the ISR needs to allow the commander to highlight the installation's infrastructure priorities/needs in supporting its mission.

The test survey feedback told us the ISR was measuring the correct infrastructure categories and areas, however the measurement method (facility standards) needs improvement. The facility standards are being refined to assess better the functional capabilities of specific infrastructure components. Commanders are now asked to identify the installation's priority infrastructure needs to support its mission in their cover letter submitted with the ISR. They will be asked to rank order the seven infrastructure areas in terms of importance to mission and priority for resources. This should allow commanders to give visibility to their most pressing infrastructure problems.

6.3 Facility Standards Improvement

ISSUE: Many of the facility standards focus too much on "cosmetics" rather than functionality of facilities. This is a concern particularly in the Production and Maintenance facility category.

ANALYSIS: The facility Standards Booklets and Inspection Worksheets form the basis of the infrastructure quality evaluation of the ISR. As a result, they are an important element in determining the overall installation C-Rating. Standards booklets and inspection worksheets were developed in coordination with DA staff proponents for fifty categories of facilities.

A review of the test comments on the standards booklets and inspection worksheets showed there was general agreement that the standards were adequate, although improvement could be made. Some expressed the position that the wording and pictures were too "cosmetic" and lacked functionality. Utility systems standards also elicited several comments. Appendix I provides a table that summarizes the standards comments by installation.

While many of the comments and observations are valid and are being addressed, some represent personal preferences on document organization and deviations from **the objective of keeping it a simple inspection format that can be conducted by the occupant of the facility.**

SOLUTION: On 24 September 1993, the ISR Project Working Group (PWG) was given the summary of standards comments, asked to review those in their areas of staff proponency and provide any recommended adjustments. Following the PWG's recommendations for adding functionality, the standards are being adjusted as appropriate. Also there have been some recommended changes to which inspection items should be rated as critical and these are under review. **These refined standards and inspection worksheets will be staffed with the original 11 test installations and MACOMs during the next ISR test.**

The Logistics Evaluation Agency (LEA), proponent for the production and maintenance facility standards, has worked with DESCOM in adding functionality to the these standards. This was a major concern for AMC installations.

The recommended changes are being staffed and incorporated as appropriate. In order to reduce the impression that the standards wording is focused only on the cosmetic appearances of the facility, the bullets that emphasize the building component condition appear first. These bullets are only meant as a guide to help describe the condition of the inspection item. They should not be used as a strict checklist in evaluating facility condition.

There were many comments on utility systems. Some felt the utility systems in each individual facility should be rated by an engineer. However, that would be very manpower intensive and not be in keeping with the idea of having a simple rating system that can be performed by the user of the facility. The inspection worksheets for utility systems currently included in the ISR are for the post-wide systems rather than the individual building utilities. The utility systems are important part of the condition of the facility so a separate utility sheet will be added to the standards booklet for a non-technical assessment. The post utility systems standards have also been updated.

A "N/A" column has been added to the inspection worksheets. This will allow inspectors to ignore inspection items not present (and not needed) in the facility when completing the worksheet. The "N/A" column will help clarify the inspection process.

The pictures in the standards booklets elicited both positive and negative comments. The contractor that developed the graphics was directed to minimize but not eliminate furniture and other items from the graphics in order to give the inspector a typical view of an existing facility. A method is being developed to allow for adjustments and incorporation of additional graphics into the standards booklets.

A place for the Commander/Director's signature is being added to the bottom of each inspection worksheet for inspection accountability purposes. This was incorporated at the suggestion of test installations to permit leadership oversight of the inspection procedures.

6.4 Installation Workload

ISSUE: The ISR requires significant effort at the installation level to implement.

ANALYSIS: The manpower effort expended by the test installations varied significantly. Some installations recorded well over 2000 man-hours in preparing the ISR while others reported approximately 200 hours. By any measure, the ISR does put an added burden on installation staffs that are currently being down sized without reductions in workload. The test revealed that the staff organization and supervision effort to implement the ISR was burdensome, **not the actual facility inspection process. The facility inspection times reported varied from an average of 15 minutes to 1 hour per facility.**

Test feedback showed the ISR staff effort was tied up in these main areas:
   a. Organizing who needs to inspect which facilities;
   b. Reproducing facility inspection worksheets and standards booklets and distributing them down to inspector level;
   c. Coordinating and conducting training for facility inspectors;
   d. Answering inspector questions/complaints throughout the inspection process;
   e. Consolidation and quality control of inspection results;
   f. Data entry of inspection results into the ISR software;
   g. Preparation of manual ISR cost reports.

Each test installation had to dedicate one person, or a team of people, full time to conducting the ISR test. Almost all installations felt the short test time window prevented them from decentralizing the ISR supervision, quality control and data entry responsibilities. Each installation and MACOM wants to see the ISR eliminate other installation reporting requirements.

The installation ISR POCs consumed a significant amount of mission planning time in sorting facility worksheets with applicable standards booklets, attaching facility labels to inspection worksheets, and reproducing worksheets and standards booklets. To reduce this effort, the next software package will allow installations to print their own inspection worksheets with facility identification information printed on the forms. This should reduce the form sorting and reproduction effort.

The installation staff will probably experience a steep learning curve in implementing the ISR. It will be difficult initially to implement as any new way of doing business is, however successive iterations of the ISR should be fairly easy to run if some institutional knowledge is retained by the staff. Since this report will probably be a once a year requirement (final reporting cycle is not yet identified), installation staffs may have trouble if the ISR POC is changed each report cycle. Also, the majority of facility inspectors will probably turn over each year so inspection training will always be needed.

SOLUTION: The ISR implementing instructions will be improved to reflect the lessons learned from the test on how installations organized to conduct the ISR. A section of the instructions will be dedicated to suggested task organization and process implementation steps. Subsequent training for the ISR has already incorporated detailed task planning suggestions for installation staffs. Chapter 8 of this report details the lessons learned on task organization and planning at the installation level.

An ISR training video is being developed to assist installations in training of facility inspectors. This VHS tape will provide a short overview of the ISR, suggested task planning steps for the

Installation's ISR POC, and a demonstration of the facility inspection process. This should reduce some of the installation staff's training and quality control burden.

Several software enhancements are being made to make the ISR system more user friendly. These enhancements, particularly in the areas of data entry and cost report preparation, should significantly reduce the ISR workload.

Installations should have at least 90 days to plan for, and conduct, an ISR. With more time to plan future ISR reports, installations should strive to decentralize some of the data entry responsibilities by using the ISR Satellite software program (ISRS). Further, installations may also be able to decentralize some of the organizational and quality control responsibilities.

The manpower data collected from the test installations has been provided to the Force Integration personnel, USAFISA, on the HQDA staff for a manpower requirements study.

The ACSIM is studying the use of ISR data to eliminate or streamline the Unconstrained Requirements Report (URR), the Tri-Annual Inspection requirement and the Installation Commander's Annual Real Property Utilization Survey (ICARPUS). Currently the installation (in some cases the MACOM) determines its facilities funding requirements and reports them as part of the URR. Any facility maintenance or renovation projects which remain unfunded at the end of the FY are added to the Backlog of Maintenance and Repair (BMAR). Similar information is tracked for new construction. The URR, BMAR, and new construction backlog are all based on requirements currently known to the Director of Engineering and Housing (DEH) while the equivalent ISR costs are based on total installation facilities requirements. The BMAR and new construction backlog reports are also being evaluated for utility in light of the data being generated by the ISR.

6.5 Cost Reports

ISSUE: The manual cost reports required by the ISR are difficult to complete.

ANALYSIS: The manual cost reports proved difficult to complete for several reasons. First, the manual reports require cost information to be broken down by appropriation source while the ISR software provides total sustainment, renovation and new construction costs. The installations found it difficult to break down these aggregate costs into the proper appropriations that fund the various infrastructure areas. Second, the implementing instructions were not comprehensive enough in how to prepare the reports. Third, the ISR instructions did not define a cutoff for separating major and minor MILCON costs, nor did they establish a limit where renovation costs should be treated as MILCON costs. Finally, the installations had to manually gather information from several automated cost reports in order to prepare the manual reports.

SOLUTION: Automate the process and improve the user instructions. A supplemental software package to the ISR program will construct the appropriation cost reports with installation edit capability. A renovation and MILCON cost threshold factor will be added to the current automated cost reports as well as a major / minor MILCON threshold factor. The software will also consolidate all needed cost information for the manual installation reports on one page. The ISR instructions will be improved on cost reports to include better examples and a list of appropriation sources / budget activities that should be reported with the cost reports.

6.6 Facility Category Group Configuration

ISSUE: Not all important facilities were included in the ISR evaluation process.

ANALYSIS: In the initial determination of important facility category groups (FCGs) to be included in the ISR analysis process, several critical facility types were omitted. These included many firing ranges and two applied instruction buildings. These were grouped, along with many less important facilities, into seldom analyzed "bucket" FCGs. Also, in order to capture several important recreational facilities, it was necessary to pull their bucket FCG which included many less important facilities.

SOLUTION: The ISR will add 12 Individual Weapon Qualification Ranges and 8 Major Weapon System Ranges to the list of facilities to be analyzed. These are not yet true FCGs, but will be so classified in the near future. Also, the Miscellaneous Recreation Facilities bucket FCG is being deleted from the ISR, but 5 important component facilities types are being retained. A list of the facility types to be added in future ISR evaluations is provided in Appendix J.

6.7 Mobilization Support Facilities

ISSUE: The ISR does not provide visibility to installation infrastructure needs for supporting mobilization missions.

ANALYSIS: An issue raised during the test was that to serve as a "power projection platform", some installations need an infrastructure "surge" capability to support deploying and mobilizing forces. The underlying problem is that current Army policy does not authorize facility allowances solely to support mobilization requirements. In the past, excess World War II wood barracks were kept available to house mobilizing or deploying forces not normally stationed on an installation. In some MACOMs, WWII wood facilities are currently be torn down, hence the capability to meet "surge" demand no longer exists. No allowances are authorized to replace these facilities so some installations will be dependent on local economy sources to support their "power projection platform" roles.

This issue was briefed to the ISR Executive Steering Committee (ESC) at HQDA in October. The ESC members felt this is an Army policy issue that should be addressed outside of the ISR by the ACSIM.

SOLUTION: While the ISR will not address this issue directly, installations can identify their infrastructure shortfalls in supporting deployment / mobilization missions in a few ways:

    a. Edit the facility requirements from RPLANS in the ISR database to reflect a greater need and, therefore, a probable lower infrastructure C-Rating in that area. Increasing requirements to reflect a shortfall will also generate estimated costs to fulfill the shortfalls.

    b. Work with MACOMs using the ACSIM's FARA process mentioned in Chapter 2 to get allowances authorized for these facilities.

    c. Identify in the Commander's cover letter submitted with the ISR these facility shortfalls.

7. Automation Enhancements

A list of ISR software enhancements, not discussed elsewhere in this report, is as follows:

     a.   The ISR database will automatically include any UICs which the installation had assigned to facilities in the RPI.

     b.   The Facilities Not Yet Surveyed report will include the UIC assigned to each facility listed.

     c.   Data entry is easier because all installation facility data is on a scroll-through list. The user will be able to quickly scroll to the facility of interest, and then need only enter the quality rating (GREEN, AMBER, RED) and the UIC if not already present.

     d.   A stand-along program will automatically print the correct inspection worksheet for each facility, with header information already preprinted.

     e.   Users will have the capability to generate and print reports at the ISR Satellite workstation.

     f.   The Facilities On-Hand/Requirements report will show total facility assets (including non-permanent facilities) and the associated percent of requirement satisfied by total assets. These would be for information only, and would not be included in the quantitative C-rating calculations.

     g.   The software includes a DA/MACOM level program to facilitate the analysis and use of installation level ISR data.

8. Lessons Learned on the ISR Process at Installation Level.

The installations that prepared the most detailed reports, and apparently got the most cooperation from units and directorates, were those that organized a multi-functional team to execute the ISR. Generally, the installations that had the most difficulty in implementing the ISR were those that kept the report responsibility solely within the DEH/DPW realm.

An effective approach used by some installations was putting overall responsibility for the ISR under the G-3 / Director of Plans & Training office. This enabled these installations to make facility users responsive and supportive in the inspection process. Also, these installations used Unit Status Report (USR) reporting channels to initially organize the ISR reporting channels. Other key members of a multi-functional ISR team need to be the real property manager and/or the master planner from the DEH/DPW, and someone from the Resource Management office who understands the appropriation sources used by the installation.

In preparing to conduct an ISR, installations can use these task planning suggestions:

    a. Real property managers should update the assets inventory looking particularly at:
        - Facility conversions and diversions;
        - Multi-use facilities;and
        - UICs in the database.

    b. Carefully plan task organization at the installation level considering the comments above.

    c. Brainstorm the approach to use for facility inspections. The preferred approach is to use user / unit level inspections. Another approach is to use centralized inspection teams. Both approaches were used during the test with success. The user / unit level inspections are preferred because you get first hand knowledge about conditions from those using the facility everyday. Quality control of the process is more difficult with this approach. Centralized teams can be easier to organize and supervise, however the inspection process takes longer due to limited resources.

    d. Plan for training facility inspectors. The training video should help this process.

    e. Lay out a plan for who inspects which facility.

    f. Develop a plan for consolidating inspection data using the ISRS software or manual means.

    g. Plan for quality control of inspections. Some installations randomly audited 10% of the overall number of inspections using a DEH/DPW team. Most test installations had to manually inspect each facility worksheet for accuracy as they entered data into the ISR software.

    h. Determine how best to consolidate facility quality data at the main ISR computer workstation.

    i. Generate the initial ISR reports and do a "Sanity Check" of the C-Ratings. If some do not seem to make sense, there is probably a problem with either the facility allowances / requirements from RPLANS and/or the real property asset data in the ISR database.

    j. Have DRM, DPCA and DEH/DPW personnel jointly complete cost reports.

    k. Provide information to the installation commander with recommendations for up/down grades of any area C-Ratings. Have the Commander rank order the 7 infrastructure areas in terms of priority for resources and importance to supporting missions.

9. ISR Uses (Reinventing Government)

The ISR was developed in response to concerns that current systems and reports were not meeting Army needs for installation management. These concerns were exacerbated by reduced budgets, difficulty in prioritizing/allocation scarce dollars and future role of installations as "power projection platforms". Upon completion, the ISR will provide a comprehensive overview of an installation's status in Infrastructure, Environment and Services as well as a macro level estimate of the resources required to sustain or improve the status of the installation. This tool offers the Army a new way of doing business to successfully manage its installations into the 21st century.

Under the old way of business, leaders at all levels of the Army were often provided an inconsistent and incomplete picture--many stovepipe reports were compiled at the installation providing higher headquarters with detailed and technical information concerning the installation. The Installation Commander was frequently left without a comprehensive and horizontal view of how these stovepipes tied together and what the reports told about the installation's status. The same was true at MACOM and HQDA. The ISR on the other hand, will provide an overview for the Commander which clearly defines the installation's condition and resource needs. Part I - Infrastructure is designed to be used at various levels of the Army as discussed below.

9.1 Installation Level

As a Commander's tool, the ISR will provide a comprehensive overview of the status of the installation. Using terminology similar to the Unit Status Report (C-ratings to describe the status) it will enable the Commander to relate the installation status to the impact on the installation mission. During the ISR test of Part I - Infrastructure, positive feedback was received from the test installations as follows:

a. It is useful as a tool for determining the condition of the installation, enabling the Installation Commander to justify his needs.

b. The use of standards provides a guide to the quality of facilities which the Army seeks for its installations over the long term.

c. The user input into the evaluation of facilities provides a perspective which has previously been lacking, i.e., that of the suitability of the facility for its purpose or mission (functionality).

d. The ISR data collected was valuable information for validating and updating local installation engineer databases.

e. The installation teamwork which was demonstrated during the compilation of the ISR indicated that the functional offices on an installation gained an appreciation for each other's responsibilities and that by working together, the product was more meaningful to the Commander.

f. The ISR, when refined, will enable the Commander, Master Planner and Resource Manager to prioritize the future installation requirements according to identified needs in the ISR. Likewise, it was viewed as having potential for assisting in the allocation of resources.

g. The ISR should provide continuity of effort in infrastructure improvement between Commanders.

h. It will provide a ready source of installation information of interest to visitors.

i. The ISR will support the Installation Long Range Plan or Strategy by providing a measure of progress toward goals/objectives.

j. It will provide a form of performance measurement for installation management.

9.2 MACOM Level

a. The Installation ISRs will provide the MACOM with a comprehensive picture of the status of infrastructure on its installations against an Army-wide standard.

b. The ISR will provide a validated analysis of installation facilities requirements.

c. It will provide an overview of the priorities of its Installation Commanders and their concerns regarding the status of the installations.

d. The ISR will identify installation resource requirements using standard cost factors as a basis for the estimates. It will assist the MACOM prioritizing and allocating resources.

e. The ISR software will generate MACOM level reports which will provide installation quality and quaintly detail for all segments of the ISR, e.g. Area, Categories, Sub-categories, Facilities Category groups.

f. The ISR information, and trends indicated therein, should assist MACOMs in changing or establishing policy.

9.3 HQDA Level

The ISR will provide a comprehensive overview of infrastructure which will assist Army leadership in decision making through the Infrastructure Decision Architecture. In this regard, it should improve the resource prioritization and allocation processes by providing a consistent and complete summary of Army infrastructure requirements. Specifically the ISR will:

a. Provide a comprehensive picture of the condition of infrastructure on Army installations.

b. It will provide a validated analysis of facilities requirements for Army installations.

c. It will provide a complete and consistent cost estimate of the costs to sustain Army installations at current C-ratings.

d. It will provide a complete and consistent cost estimate of the cost to improve the C-ratings of Army installations.

e. It will identify the total Army resource shortfall as well as the impact the shortfall will have on Army Installation C-ratings.

f. It will provide information for use in Total Army Basing Studies and stationing analyses.

10. Future ISR Implementation Plan and Time Line

During October - November 1993, the results of the ISR test were briefed to the Program Budget Committee, co-chaired by MG Howard, the Army Budget Director, and the Select Committee, chaired by General Peay, the Vice Chief of Staff of the Army. After these briefings, a decision briefing was presented to General Sullivan for future implementation of the ISR. __

During the Select Committee briefing, General Peay supported the ISR but decided the system needed to be tested again with the refinements discussed in this report. General Sullivan supported testing the ISR, Part I, again at more installations in Feb-Mar 94 with the goal of implementing CONUS wide in Jul-Aug 94.

This expanded testing will be conducted at the original 11 test sites and an additional 11 installations. Some specified objectives of this additional test are:

a. Use the original test sites to validate the refinements made to the ISR system.

b. Test the whole ISR process - from installation report preparation, through MACOM aggregation and use of data, to use of information at HQDA.

c. Determine how to best aggregate ISR data for use at HQDA level.

d. Examine closely reports which can be eliminated and/or streamlined at both MACOM and HQDA level by use of the ISR.

e. Validate the utility of an overall installation infrastructure C-Rating.

f. Get feedback directly from installation commanders on the ISR. Conduct an AAR for the CSA with some test installation commanders involved.

Based on the outcome of the decision briefing process, the time line for the ISR follows:

	EVENT	DATES
Part I (Infrastructure)	Expanded testing at CONUS installations	Feb - Apr 94
	Refinement based on expanded testing	Apr - May 94
	Implementation at CONUS Installations	Jul - Aug 94
	Implementation for USAR & OCONUS	Apr - Jun 95
Part II (Environment)	Environment Concept Staffing	Oct - Nov 93
	Field Test	Feb - Apr 94
	Implementation	Jul - Aug 94
Part III (Services)	Services Concept Development	Apr 94 - Apr 95
	Testing at Selected Installations	Apr 96
	Infrastructure Decision Architecture (*IDA)	Jan 94

* The IDA is a process by which the Army leadership can make nonincremental and comprehensive decisions on sustaining and improving the Army's facilities.

APPENDIX A - Distribution

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APPENDIX B - Installation and Area Test C-Ratings

ISR Area	AMC			TRADOC			FORSCOM				MDW
	Aberdeen	Anniston	Redstone	Benning	Gordon	Knox	Campbell	Carson	Hood	Riley	Belvoir
Mission Facilities	C-3	C-2* (C-3)	C-3	C-4	C-3	C-3	C-4	C-2* (C-3)	C-3* (C-4)	C-3	C-3
Mobility Facilities	C-4	C-3	C-3	C-3	C-2* (C-3)	C-3	C-3	C-2* (C-4)	C-3	C-2	C-3
Housing Facilities	C-3	N/A* (C-3)	C-3	C-3	C-2* (C-3)	C-3	C-3	C-3	C-3	C-3	C-3
Community Facilities	C-3	C-2* (C-3)	C-2	C-3	C-2* (C-3)	C-2	C-4	C-2* (C-3)	C-3	C-3	C-3
Utility Systems	C-3	C-2* (C-3)	C-3	C-3	C-3	C-2	C-3	C-2	C-3	C-2* (C-3)	C-3
Reserve Facilities	N/A	N/A	N/A	C-4	N/A* (C-4)	C-1	N/A	C-2	N/A	C-2* (C-3)	C-4
Nat. Guard Facilities	C-1	N/A	N/A	N/A	N/A	N/A	N/A	C-2	N/A	C-2* (C-3)	N/A
Overall	C-3	C-2*	C-3	C-3	C-3	C-2	C-3	C-2*	C-3	C-2*	C-3

Notes:

1. * Indicates a Commander's C-rating Overwrite
2. Rating in Brackets was calculated rating prior to overwrite.

		Aberdeen	Anniston	Redstone	Benning	Gordon	Knox	Campbell	Carson	Hood	Riley	Belvoir
Area	**MISSION**	C-3	C-2* (C-3)	C-3	C-4	C-3	C-3	C-4	C-2* (C-3)	C-3* (C-4)	C-3	C-3
Category	Tng Rng/Area											
Sub-Category	Ind Wpn Rng	C-4	C-4	C-4	C-2	C-2	C-2	C-3	C-3	C-4	C-3	C-4
"	Maj Wpn Rng	N/A	N/A	N/A	C-4	N/A	C-2	C-4	C-2	C-3	C-3	N/A
"	Manuvr Area	C-4	N/A	C-4	C-2	C-2	C-2	C-1	C-2	C-4	C-3	C-4
Category	Maint & Prod											
Sub-Category	Maint Fac	C-2	C-2	C-2	C-3	C-4	C-3	C-3	C-3	C-3	C-3	C-2
"	Prod Fac	C-2	C-1	C-2	C-4	C-4	C-4	N/A	C-4	C-1	C-1	C-3
Category	Classrooms											
Sub-Category	Gen Pur Inst	C-3	C-4	C-4	C-3	C-2	C-4	C-4	C-4	C-4	C-3	C-3
"	Applied Inst	C-3	C-4	C-2	C-4	C-3	C-4	C-4	C-4	C-4	C-4	C-3
Category	Res & Devel											
Sub-Category	R&D Bldg	C-3	N/A	C-3	C-4	C-2	N/A	N/A	C-4	N/A	N/A	C-2
"	R&D Ranges	C-4	N/A	C-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C-2
Category	Sup & Stg											
Sub-Category	Bulk Fuel	C-3	C-4	C-1	C-4	C-2	C-2	C-4	C-4	C-3	C-4	C-4
"	Gen S&S	C-4	C-2	C-3	C-3	C-3	C-3	C-3	C-3	C-3	C-3	C-3
Category	Cvnl Ammo Stg											
Sub-Category	Ammo Strg	C-4	C-2	C-3	C-3	C-2	C-1	C-3	C-1	C-3	C-3	C-2
"	Ammo Maint	C-4	C-2	C-2	N/A	N/A	N/A	N/A	N/A	C-4	C-4	N/A
Category	Admin Facil											
Sub-Category	Unit Ops	C-3	N/A	C-3	C-3	C-3	C-4	C-3	C-3	C-4	C-3	C-2
"	Gen Pur Adm	C-3	C-3	C-3	C-3	C-3	C-3	C-4	C-3	C-3	C-3	C-3
"	Confinmt Fac	N/A	N/A	N/A	C-3	C-4	C-2	C-4	C-1	C-4	C-3	N/A

		Aberdeen	Anniston	Redstone	Benning	Gordon	Knox	Campbell	Carson	Hood	Riley	Belvoir
Area	**MOBILITY**	C-4	C-3	C-3	C-3	C-2* (C-3)	C-3	C-3	C-2* (C-4)	C-3	C-2	C-3
Category	Road & Trail											
Sub-Category	Surf Roads	C-2	C-2	C-2	C-2	C-3	C-3	C-3	C-2	C-3	C-2	C-3
"	Brdg&US Rds	C-4	C-4	C-4	C-4	C-2	C-4	C-2	C-4	C-4	C-4	C-4
Category	Railroads											
Sub-Category	Track	C-4	C-3	C-1	C-2	C-2	C-2	C-4	C-4	C-1	C-1	C-1
"	Facilities	C-4*	N/A	N/A	C-4*	N/A	N/A	N/A	N/A	C-3*	N/A	N/A
Category	Airfield											
Sub-Category	Facilities	C-4	C-4	C-4	C-4	N/A	C-4	C-3	C-4	C-3	C-2	C-2
"	Pavements	C-3	C-4	C-3	C-2	C-3	C-3	C-2	C-3	C-2	C-3	C-3
Category	Ports											
Sub-Category	Pier/Wharf	C-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
"	Stg/Marshl	N/A	N/A	C-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
"	Rail/Truck	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
"	Intermodal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

									AMC		**TRADOC**				**FORSCOM**				**MDW**

		Aberdeen	Anniston	Redstone	Benning	Gordon	Knox	Campbell	Carson	Hood	Riley	Belvoir
Area	**HOUSING**	C-3	N/A* (C-3)	C-3	C-3	C-2* (C-3)	C-3	C-3	C-3	C-3	C-3	C-3
Category	Fam Housing											
Sub-Category	Fam Housing	C-3	C-1	C-3	C-4	C-2	C-3	C-3	C-2	C-3	C-3	C-3
Category	UPH											
Sub-Category	SEBQ/BOQ	C-3	C-4	C-4	C-3	C-4	C-4	C-4	C-4	C-4	C-4	C-4
"	Barracks	C-3	C-4	C-3	C-3	C-4	C-4	C-4	C-3	C-3	C-4	C-4
"	Transient	C-4	C-4	C-4	C-2	C-4	C-1	C-2	C-4	C-2	C-1	C-4
Category	Dining Fac											
Sub-Category	Dining Fac	C-2	C-4	C-2	C-3	C-4	C-3	C-3	C-2	C-3	C-3	C-2

APPENDIX C - Area and Sub-Category Test C-Ratings

	MDW		FORSCOM			TRADOC			AMC		
ISR Area	Belvoir	Riley	Hood	Carson	Campbell	Knox	Gordon	Benning	Redstone	Anniston	Aberdeen
COMMUNITY	C-3	C-3	C-3*	C-2* (C-3)	C-4	C-2	C-2* (C-3)	C-3	C-2	C-2* (C-3)	C-3
Category Post Exch / Sub-Category Post Exch	C-3	C-3	C-3	C-3	C-3	C-2	C-4	C-4	C-2	C-3	C-3
Category Commissary / Sub-Category Commissary	C-4	C-4	C-3	C-2	C-4	C-1	C-2	C-2	C-2	C-4	C-2
Category Hospt/Medical / Sub-Category Dental Clinic	C-2	C-1	C-4	C-1	C-3	C-2	C-2	C-4	C-2	C-4	C-3
" Hospital	C-3	C-1	C-3	C-1	C-1	C-2	C-2	C-4	C-1	C-4	C-2
" Trp Med Clin	C-4	C-3	C-3	C-3	C-4	C-3	C-2	C-3	C-3	C-1	C-2
" Vet Facility	C-4	C-2	C-4	C-4	C-4	C-2	C-4	C-3	C-2	N/A	C-2
Category Child Dev Crt / Sub-Category Child Dev Ctr	C-4	C-4	C-4	C-4	C-4	C-4	C-4	C-4	C-4	C-4	C-4
Category Community Spt / Sub-Category Educatn Facl	C-3	C-3	C-4	C-2	C-4	C-2	C-2	C-3	C-1	N/A	C-4
" Phys Fit Ctr	C-3	C-2	C-4	C-4	C-4	C-4	C-2	C-4	C-3	N/A	C-4
" OD Sprt/Recrn	C-4	C-3	C-4	C-4	C-4	C-4	C-3	C-4	C-2	C-4	C-4
" Recreatn Fac	C-2	C-4	C-4	C-4	C-4	C-3	C-3	C-3	C-2	C-4	C-3
" Service Facl	C-4	C-3	C-4	C-3	C-3	C-3	C-3	C-4	C-2	C-2	C-4

APPENDIX C - Area and Sub-Category Test C-Ratings

		MDW	FORSCOM				TRADOC			AMC		
	ISR Area	Belvoir	Riley	Hood	Carson	Campbell	Knox	Gordon	Benning	Redstone	Anniston	Aberdeen
Area	UTILITY SYSTEMS	C-3	C-2* (C-3)	C-3	C-2	C-3	C-2	C-3	C-3	C-3	C-2* (C-3)	C-3
Category	Heat/AC											
Sub-Category	Sour/Dstn	C-3	C-2	C-3	C-3	C-2	C-2	C-4	C-4	C-3	C-2	C-3
Category	Elect/Gas											
Sub-Category	Sour/Dstn	C-4	C-3	C-2	C-3	C-3	C-2	C-2	C-4	C-2	C-2	C-3
Category	Water											
Sub-Category	Tmt/Stg/Dn	C-2	C-3	C-4	C-3	C-3	C-2	C-4	C-3	C-3	C-3	C-4
Category	Sewer											
Sub-Category	Tmt/Dsp/Cn	C-2	C-2	C-2	C-2	C-3	C-3	C-2	C-2	C-4	C-3	C-3
Category	Info Mgt											
Sub-Category	Info Mgt	N/A	N/A	C-4*	C-1*	C-4*	N/A	N/A	C-3*	C-1*	N/A	C-4*
Area	RESERVE	C-4	C-2* (C-3)	N/A	C-2	N/A	C-1	N/A* (C-4)	C-4	N/A	N/A	N/A
Category	Reserve Fac											
Sub-Category	Reserve Fac	C-4	C-3	N/A	C-2	N/A	C-1	C-4	C-4	N/A	N/A	N/A
Area	NATIONAL GUARD	N/A	C-2* (C-3)	N/A	C-2	N/A	N/A	N/A	N/A	N/A	N/A	C-1
Category	Nat Guard											
Sub-Category	NatGuard	N/A	C-3	N/A	C-2	N/A	N/A	N/A	N/A	N/A	N/A	C-1

APPENDIX D - Summary Report of the General Purpose Instruction Facility Sub-Category

Sub-Category: General Purpose Instruction Facilities

	Quality/Renovation Costs				Quantity/New Construction Costs			
	Rating	$ to C1:	$ to C2:	$ to C3:	Rating	$ to C1:	$ to C2:	$ to C3:
MDW								
Fort Belvoir	C-3	51,314,205	29,197,136	0	C-1	0	0	0
MACOM Totals		51,314,205	29,197,136	0		0	0	0
FORSCOM								
Fort Carson	C-2	3,342,809	0	0	C-4	7,671,226	5,257,345	2,843,464
Fort Riley	C-2	1,865,352	0	0	C-3	7,541,107	5,777,481	4,013,856
Fort Campbell	C-2	136,790	0	0	C-4	20,024,514	16,923,602	13,822,690
Fort Hood	C-2	208,002	0	0	C-4	32,044,665	27,077,579	22,110,493
MACOM Totals		5,552,953	0	0		67,281,512	55,036,007	42,790,503
TRADOC								
Fort Benning	C-3	25,642,317	1,014,060	0	C-3	58,319,987	37,724,301	17,128,616
Fort Gordon	C-2	16,272,453	0	0	C-2	185,398	48,211	0
Fort Knox	C-4	9,495,504	7,940,885	2,147,901	C-4	27,372,846	20,433,260	13,493,673
MACOM Totals		51,410,274	8,954,945	2,147,901		85,878,231	58,205,772	30,622,289
AMC								
Anniston AD	C-3	100,000	36,796	0	C-4	737,358	417,419	97,480
Redstone Arsenal	C-4	5,737,946	4,257,296	831,312	C-2	1,135,957	0	0
Aberdeen PG	C-3	7,778,902	3,974,840	0	C-1	0	0	0
MACOM Totals		13,616,848	8,268,932	831,312		1,873,315	417,419	97,480

The cost figures shown are not optimized dollars, but are a roll ups of all the individual components at the FCG level.

APPENDIX D - Summary Report of the General Purpose Instruction Facility Sub-Category

SUSTAINMENT COSTS to MAINTAIN CURRENT C-RATING

	Rating	Perm $:	N-Perm $:	Total $:
MDW				
Fort Belvoir	C-3	1,378.664	198,720	1,577,384
MACOM Totals		1,378,664	198,720	1,577,384
FORSCOM				
Fort Carson	C-4	113,693	126,292	239,985
Fort Riley	C-3	86,004	78,227	164,231
Fort Campbell	C-4	8,734	390,759	399,493
Fort Hood	C-4	14,407	375,915	390,322
MACOM Totals		222,838	971,193	1,194,031
TRADOC				
Fort Benning	C-3	1,091,914	223,731	1,315,645
Fort Gordon	C-2	982,261	186,118	1,168,379
Fort Knox	C-4	255,587	349,011	604,598
MACOM Totals		2,329,762	758,860	3,088,622
AMC				
Anniston AD	C-4	18,852	0	18,852
Redstone Arsenal	C-4	151,217	42,119	193,336
Aberdeen PG	C-3	422,427	174,721	597,148
MACOM Totals		592,496	216,840	809,336

The cost figures shown are not optimized dollars, but are a roll ups of all the individual components at the FCG level.

APPENDIX E - Summary Report of the Applied Instruction Facility Sub-Category

Sub-Category: Applied Instruction Facilities

	Quality/Renovation Costs				Quantity/New Construction Costs			
	Rating	$ to C1:	$ to C2:	$ to C3:	Rating	$ to C1:	$ to C2:	$ to C3:
MDW								
Fort Belvoir	C-2	4,121,417	0	0	C-3	11,918,918	9,557,583	7,196,248
MACOM Totals		4,121,417	0	0		11,918,918	9,557,583	7,196,248
FORSCOM								
Fort Carson	C-2	263,965	0	0	C-4	11,950,898	10,060,320	8,169,741
Fort Riley	C-1	0	0	0	C-4	5,054,532	3,552,305	2,500,033
Fort Campbell	C-2	151,034	0	0	C-4	15,562,597	13,172,166	10,781,735
Fort Hood	C-2	1,862,248	0	0	C-4	13,874,283	10,291,703	6,709,124
MACOM Totals		2,277,247	0	0		46,442,310	37,076,494	28,160,633
TRADOC								
Fort Benning	C-2	2,338,569	0	0	C-4	30,283,282	23,479,562	16,675,842
Fort Gordon	C-2	20,248,668	0	0	C-3	3,053,138	2,595,167	2,137,196
Fort Knox	C-4	46,747,303	30,316,216	411,964	C-3	4,169,146	3,543,774	2,918,402
MACOM Totals		69,334,540	30,316,216	411,964		37,505,566	29,618,503	21,731,440
AMC								
Anniston AD	N/A	0	0	0	C-4	2,818,889	2,396,056	1,973,223
Redstone Arsenal	C-2	24,045,903	17,859,897	0	C-1	0	0	0
Aberdeen PG	C-3	28,101,222	13,880,300	0	C-1	0	0	0
MACOM Totals		52,147,125	31,740,197	0		2,818,889	2,396,056	1,973,223

The cost figures shown are not optimized dollars, but are a roll ups of all the individual components at the FCG level.

**APPENDIX E - Summary Report of the Applied Instruction Facility
Sub-Category**

SUSTAINMENT COSTS to MAINTAIN CURRENT C-RATING

	Rating	Perm $:	N-Perm $:	Total $:
MDW				
Fort Belvoir	C-3	133,816	39,740	173,556
MACOM Totals		133,816	39,740	173,556
FORSCOM				
Fort Carson	C-4	7,663	129,267	136,930
Fort Riley	C-4	64,775	95,776	160,551
Fort Campbell	C-4	4,374	99,828	104,202
Fort Hood	C-4	122,865	92,154	215,019
MACOM Totals		199,677	417,025	616,702
TRADOC				
Fort Benning	C-4	183,879	208,640	392,519
Fort Gordon	C-3	1,190,240	258.632	1,448,872
Fort Knox	C-4	1,144,283	264,692	1,408,975
MACOM Totals		2,518,402	731,964	3,250,366
AMC				
Anniston AD	C-4			
Redstone Arsenal	C-2	800,578	26,873	827,451
Aberdeen PG	C-3	1,187,297	176,524	1,363,821
MACOM Totals		1,987,875	203,397	2,191,272

The cost figures shown are not optimized dollars, but are a roll ups of all the individual components at the FCG level.

APPENDIX F - Summary Report of the Barracks Sub-Category

Sub-Category: BARRACKS

	Quality/Renovation Costs				Quantity/New Construction Costs		
	Rating	$ to C1:	$ to C2:	$ to C3:	Rating	$ to C1:	S to C2:	$ to C3:
MDW								
Fort Belvoir	C-4	21,139,598	20,433,598	9,370,103	C-3	14,807,125	6,400,202	0
MACOM Totals		21,139,598	20,433,598	9,370,103		14,807,125	6,400,202	0
FORSCOM								
Fort Carson	C-2	19,345,295	0	0	C-3	18,600,096	11,139,094	9,173,371
Fort Riley	C-4	64,375,053	50,910,625	7,408,590	C-3	8,931,632	7,591,887	6,252,142
Fort Campbell	C-4	87,531,892	77,507,364	26,580,611	C-4	60,653,653	23,081,290	11,446,230
Fort Hood	C-3	98,352,973	38,415,810	0	C-2	7,443,026	1,276,765	0
MACOM Totals		269,605,213	166,833,799	33,989,201		95,628,407	43,089,036	26,871,743
TRADOC								
Fort Benning	C-3	83,508,393	46,859,306	0	C-3	92,562,174	63,169,065	33,775,957
Fort Gordon	C-4	66,655,996	50,453,409	4,470,555	C-3	10,044,723	8,538,015	7,031,306
Fort Knox	C-4	87,200,221	73,062,786	11,113,081	C-2	18,497,474	10,068,443	8,291,659
MACOM Totals		237,364,610	170,375,501	15,583,636		121,104,371	81,775,523	49,098,922
AMC								
Anniston AD	N/A	0	0	0	C-4	39,575	33,639	27,703
Redstone Arsenal	C-3	9,499,306	6,028,476	0	C-1	0	0	0
Aberdeen PG	C-3	32,887,597	27,234,478	0	C-1	0	0	0
MACOM Totals		42,386,903	33,262,954	0		39,575	33,639	27,703

The cost figures shown are not optimized dollars, but are a roll ups of all the individual components at the FCG level.

APPENDIX F - Summary Report of the Barracks Sub-Category

SUSTAINMENT COSTS to MAINTAIN CURRENT C-RATING

	Rating	Perm $:	N-Perm $:	Total $:
MDW				
Fort Belvoir	C-4	605,875	305,642	911,517
MACOM Totals		605,875	305,642	911,517
FORSCOM				
Fort Carson	C-3	2,390,984	36,412	2,427,396
Fort Riley	C-4	2,382,321	236,175	2,618,496
Fort Campbell	C-4	2,788,924	702,439	3,491,363
Fort Hood	C-3	5,929,178	410,688	6,339,866
MACOM Totals		13,491,407	1,385,714	14,877,121
TRADOC				
Fort Benning	C-3	2,216,879	541,662	2,758,541
Fort Gordon	C-4	2,518,179	95,232	2,613,411
Fort Knox	C-4	2,076,189	1,275,581	3,351,770
MACOM Totals		6,811,247	1,912,475	8,723,722
AMC				
Anniston AD	C-4			
Redstone Arsenal	C-3	707,443	0	707,443
Aberdeen PG	C-3	1,705,989	437,397	2,143,386
MACOM Totals		2,413,432	437,397	2,850,829

The cost figures shown are not optimized dollars, but are a roll ups of all the individual components at the FCG level.

APPENDIX G - Summary Report of the Child Development Center Sub-Category

Sub-Category: CHILD DEVELOPMENT CENTERS

	Quality/Renovation Costs				Quantity/New Construction Costs			
	Rating	$ to C1:	$ to C2:	$ to C3:	Rating	$ to C1:	$ to C2:	$ to C3:
MDW								
Fort Belvoir	C-1	0	0	0	C-4	4,700,420	2,927,380	1,154,339
MACOM Totals		0	0	0		4,700,420	2,927,380	1,154,339
FORSCOM								
Fort Carson	C-1	0	0	0	C-4	17,611,000	14,448,943	11,286,886
Fort Riley	C-1	0	0	0	C-4	12,094,688	9,876,648	7,658,609
Fort Campbell	N/A	0	0	0	C-4	26,278,591	22,336,803	18,395,014
Fort Hood	C-1	0	0	0	C-4	32,678,399	26,432,933	20,187,467
MACOM Totals		0	0	0		88,662,678	73,095,327	57,527,976
TRADOC								
Fort Benning	C-1	0	0	0	C-4	7,741,752	5,724,298	3,706,844
Fort Gordon	C-1	0	0	0	C-4	3,404,676	2,356,295	1,307,914
Fort Knox	C-1	0	0	0	C-4	8,556,782	6,283,041	4,009,300
MACOM Totals		0	0	0		19,703,210	14,363,634	9,024,058
AMC								
Anniston AD	N/A	0	0	0	C-4	3,663,678	3,114,126	2,564,575
Redstone Arsenal	C-1	0	0	0	C-4	10,463,710	8,556,259	6,648,809
Aberdeen PG	C-3	529,749	529,749	0	C-4	6,133,576	4,592,305	3,051,034
MACOM Totals		529,749	529,749	0		20,260,964	16,262,690	12,264,418

The cost figures shown are not optimized dollars, but are a roll ups of all the individual components at the FCG level.

APPENDIX G - Summary Report of the Child Development Center Sub-Category

SUSTAINMENT COSTS to MAINTAIN CURRENT C-RATING

	Rating	Perm $:	N-Perm $:	Total $:
MDW				
Fort Belvoir	C-4	203,004	14,718	217,722
MACOM Totals		203,004	14,718	217,722
FORSCOM				
Fort Carson	C-4	99,028	40,492	139,520
Fort Riley	C-4	76,877	0	76,877
Fort Campbell	C-4	0	52,258	52,258
Fort Hood	C-4	255,798	0	255,798
MACOM Totals		431,703	92,750	524,453
TRADOC				
Fort Benning	C-4	162,840	0	162,840
Fort Gordon	C-4	102,216	0	102,216
Fort Knox	C-4	188,527	0	188,527
MACOM Totals		453,583	0	453,583
AMC				
Anniston AD	C-4			
Redstone Arsenal	C-4	64,195	0	64,195
Aberdeen PG	C-4	118,127	0	118,127
MACOM Totals		182,322	0	182,322

The cost figures shown are not optimized dollars, but are a roll ups of all the individual components at the FCG level.

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Aberdeen Proving Grounds

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1000)	BY + yrs 2 thru 4 ($1000)	Total ($1,000)
$28,976	$29,655	$92,985	$151,616

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

Area	Funding Required to Attain C-1 Assessment ($1,000)										
	Real Property Maintenance Activities (RPMA)					Military Construction					
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yrs
sion Facilities	$63,805	$65,300	$66,796	$68,229	$69,724	$20,736	$20,815	$0	$0	$0	$0
ategic Mobility Facilities	$13,481	$13,797	$14,113	$14,416	$14,732	$0	$0	$2,742	$2,801	$2,862	$42,935
using	$14,029	$14,358	$14,687	$15,002	$15,331	$0	$0	$2,876	$2,937	$3,002	$45,025
mmunity Facilities	$4,813	$4,926	$5,039	$5,147	$5,260	$1,485	$0	$1,090	$1,113	$1,138	$17,063
lity Systems	$34,285	$35,089	$35,893	$36,663	$37,466	$0	$0	$1,884	$1,924	$1,966	$29,491
my Reserve Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
tional Guard Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TAL	$130,413	$133,470	$136,528	$139,457	$142,513	$22,221	$20,815	$8,592	$8,775	$8,968	$134,514

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Anniston Army Depot

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1,000)	BY + yrs 2 thru 4 ($1,000)	Total ($1,000)
$3,671	$3,671	$3,671	$11,013

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

Area	Funding Required to Attain C-1 Assessment ($1,000)										
	Real Property Maintenance Activities (RPMA)					Military Construction					
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yrs
Mission Facilities	$2,425	$2,425	$2,425	$2,425	$2,425	$5,572	$5,572	$5,572	$5,572	$5,572	
Strategic Mobility Facilities	$2,445	$2,445	$2,445	$2,445	$14,732	$7,084	$7,084	$7,084	$7,084	$7,084	
Housing											
Community Facilities											
Utility Systems	$4,827	$4,827	$4,827	$4,827	$4,827	$1,902	$1,902	$1,902	$1,902	$1,902	
Army Reserve Facilities											
National Guard Facilities											
TOTAL	$9,697	$9,697	$9,697	$9,697	$9,697	$14,558	$14,558	$14,558	$14,558	$14,558	$0

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Fort Belvoir

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1,000)	BY + yrs 2 thru 4 ($1,000)	Total ($1,000)
$17,614	$18,027	$56,521	$92,163

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

Area	Funding Required to Attain C-1 Assessment ($1,000)										
	Real Property Maintenance Activities (RPMA)					Military Construction					
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yrs
Mission Facilities	$112,252	$114,883	$117,513	$120,035	$122,666	$860	$0	$1,300	$30,250	$3,758	$93,943
Strategic Mobility Facilities	$24,926	$25,509	$26,094	$26,654	$27,238	$1,200	$870	$0	$0	$570	$94,896
Housing	$30,897	$31,621	$32,344	$33,039	$33,763	$4,412	$4,515	$4,619	$4,718	$4,821	$165,551
Community Facilities	$33,074	$33,849	$34,625	$35,367	$36,142	$0	$0	$1,152	$1,177	$1,203	$47,128
Utility Systems	$83,151	$85,100	$87,049	$88,916	$90,866	$15,500	$1,002	$1,025	$1,047	$1,070	$56,230
Army Reserve Facilities	$2,966	$3,036	$3,106	$3,172	$3,242	$40	$41	$42	$43	$44	$1,094
National Guard Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL	$287,266	$293,998	$300,731	$307,183	$313,917	$22,012	$6,428	$8,138	$37,235	$11,466	$458,842

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Fort Benning

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1,000)	BY + yrs 2 thru 4 ($1,000)	Total ($1,000)
$36,416	$37,270	$116,861	$190,547

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

Area	Funding Required to Attain C-1 Assessment ($1,000)										
	Real Property Maintenance Activities (RPMA)					Military Construction					
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yr
Mission Facilities	$22,975	$23,579	$42,993	$28,265	$16,443	$13,657	$13,016	$6,332	$11,241	$34,598	$160.
Strategic Mobility Facilities	$12,126	$9,252	$16,611	$16,244	$16,599	$526	$0	$0	$0	$0	$344.
Housing	$48,458	$41,920	$58,498	$60,348	$26,235	$0	$0	$0	$0	$14,306	$182.
Community Facilities	$9,082	$13,945	$24,139	$24,282	$24,432	$674	$0	$8,808	$0	$15,062	$90.
Utility Systems	$22,388	$33,739	$56,824	$59,586	$67,819	$1,964	$0	$0	$0	$0	$126.
Army Reserve Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1.
National Guard Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
TOTAL	$115,029	$122,435	$199,065	$188,725	$151,528	$16,821	$13,016	$15,140	$11,241	$63,966	$906.7

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Fort Campbell

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1,000)	BY + yrs 2 thru 4 ($1,000)	Total ($1,000)
$41,210	$42,174	$132,240	$215,624

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

Area	Funding Required to Attain C-1 Assessment ($1,000)										
	Real Property Maintenance Activities (RPMA)					Military Construction					
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yrs
Mission Facilities	$12,300	$12,600	$12,900	$13,100	$13,400	$5,200	$26,000	$0	$10,800	$12,000	$305,000
Strategic Mobility Facilities	$5,300	$5,500	$5,600	$5,700	$5,800	$4,000	$24,000	$31,000	$0	$0	$49,000
Housing	$5,800	$5,800	$6,000	$6,200	$6,400	$46,200	$21,000	$79,200	$12,000	$0	$450,000
Community Facilities	$5,300	$5,500	$5,600	$5,700	$5,800	$27,100	$0	$10,700	$1,800	$3,600	$156,000
Utility Systems	$12,300	$12,600	$12,900	$13,100	$13,400	$0	$1,400	$0	$0	$8,500	$111,000
Army Reserve Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
National Guard Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL	$41,000	$42,000	$43,000	$43,800	$44,800	$82,500	$102,400	$120,900	$24,600	$44,100	$1,071,000

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Fort Gordon

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1,000)	BY + yrs 2 thru 4 ($1,000)	Total ($1,000)
$19,272	$19,723	$61,843	$100,838

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

Area	Funding Required to Attain C-1 Assessment ($1,000)										
	Real Property Maintenance Activities (RPMA)					Military Construction					
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yrs
Mission Facilities	$14,336	$15,720	$16,080	$16,425	$16,577	$20,480	$25,152	$22,512	$22,995	$12,309	$194
Strategic Mobility Facilities	$15,360	$15,720	$17,152	$17,520	$14,036	$10,240	$12,576	$13,400	$13,688	$798	$0
Housing	$23,552	$26,200	$24,656	$23,543	$15,274	$27,136	$27,772	$28,944	$29,565	$572	$0
Community Facilities	$10,240	$11,528	$11,792	$10,950	$5,744	$5,120	$15,720	$16,080	$16,425	$708	$0
Utility Services	$6,144	$6,288	$4,288	$6,570	$3,417	$12,288	$12,576	$12,864	$13,140	$5,277	$0
Army Reserve Facilities	$0	$0	$0	$0	$0	$0	$366	$0	$0	$0	$0
National Guard Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL	$69,632	$75,456	$73,968	$75,008	$55,048	$75,264	$94,162	$93,800	$95,813	$19,664	$194

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Fort Hood

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1,000)	BY + yrs 2 thru 4 ($1,000)	Total ($1,000)
$78,641	$80,328	$251,869	$410,836

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

Area	Funding Required to Attain C-1 Assessment ($1,000)										
	Real Property Maintenance Activities (RPMA)					Military Construction					
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yrs
...on Facilities	$7,343	$15,032	$53,818	$54,974	$24,076	$95,693	$19,388	$19,296	$52,779	$56,388	$380,004
...ic Mobility Facilities	$6,163	$12,615	$45,164	$46,133	$20,204	$0	$0	$0	$42,103	$35,758	$232,156
...	$22,819	$34,857	$44,928	$37,133	$30,650	$0	$0	$0	$16,243	$17,353	$116,944
...unity Facilities	$2,732	$5,592	$20,022	$20,451	$8,957	$20,673	$10,826	$20,400	$32,198	$33,524	$227,092
...y Systems	$8,456	$17,308	$61,963	$63,293	$27,720	$0	$0	$0	$14,906	$15,925	$107,322
...y Reserve Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
...al Guard Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
...	$47,513	$85,404	$225,895	$221,984	$111,607	...	...	...	$158,229	$158,948	$1,063,518

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Fort Knox

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1,000)	BY + yrs 2 thru 4 ($1,000)	Total ($1,000)
$35,602	$36,436	$114,246	$186,284

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

Area	Funding Required to Attain C-1 Assessment ($1,000)										
	Real Property Maintenance Activities (RPMA)					Military Construction					
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yrs
Mission Facilities	$35,356	$37,053	$39,721	$43,494	$48,670	$500	$12,200	$0	$25,000	$8,500	$109,798
Strategic Mobility Facilities	$9,780	$10,249	$10,987	$12,031	$13,463	$0	$0	$0	$0	$0	$97,721
Housing	$41,618	$43,616	$46,756	$51,198	$57,291	$0	$0	$0	$0	$0	$89,389
Community Facil Facilities	$8,157	$8,549	$9,165	$10,036	$11,230	$4,040	$0	$1,950	$0	$0	$67,696
Utility Systems	$1,830	$1,918	$2,056	$2,251	$2,519	$13,200	$0	$0	$0	$0	$44,164
Army Reserve Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
National Guard Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL	$96,741	$101,385	$108,685	$119,010	$133,173	$17,740	$12,200	$1,950	$25,000	$8,500	$408,768

APPENDIX H - TEST REPORTED INSTALLATION SUSTAINMENT AND CAPITAL COST REPORTS

Fort Riley

INSTALLATION SUSTAINMENT COSTS TO MAINTAIN CURRENT C-LEVEL

Budget Year (BY) ($1,000)	Budget Year (BY) + 1 ($1,000)	BY + yrs 2 thru 4 ($1,000)	Total ($1,000)
$0	$0	$0	$0

INSTALLATION CAPITAL COSTS TO RAISE TO A C-1 LEVEL

| Area | Funding Required to Attain C-1 Assessment ($1,000) | | | | | | | | | | |
| | Real Property Maintenance Activities (RPMA) | | | | | Military Construction | | | | | |
	BY	BY+1	BY+2	BY+3	BY+4	BY	BY+1	BY+2	BY+3	BY+4	Out Yrs
Mission Facilities	$12,199	$12,491	$12,780	$13,072	$13,360	$0	$0	$0	$0	$0	$0
Strategic Mobility Facilities	$500	$512	$523	$535	$548	$0	$0	$0	$0	$0	$0
Housing	$9,882	$10,118	$10,352	$10,590	$10,822	$0	$0	$0	$0	$0	$0
Community Facilities	$2,264	$2,318	$2,372	$2,426	$2,479	$0	$0	$0	$0	$0	$0
Utility Systems	$9,556	$9,785	$10,010	$10,241	$10,465	$0	$0	$0	$0	$0	$0
Army Reserve Facilities	$59	$61	$62	$63	$65	$0	$0	$0	$0	$0	$0
National Guard Facilities	$62	$64	$65	$66	$68	$0	$0	$0	$0	$0	$0
TOTAL	$34,522	$35,349	$36,164	$36,993	$37,807	$0	$0	$0	$0	$0	$0

FOR TEST PURPOSES ONLY

APPENDIX I- Summary of Facility Standards Comments by Installation

INSTALLATION	COMMENTS
Fort Knox	Family Housing -utility systems within each FH unit are important to overall condition
Fort Knox	Heat/AC - Standards are primarily directed at central plants. Additional standards are needed for individual HVAC system
Fort Knox	UPH - Standards are vague, confusing and relies too heavily on the rater's judgment. Suggest incorporate specific sub-elements scored on C-rating. Use grid-type format like TRADOC Form 160-R
Fort Knox	UPH - Specific building utility systems should be included with the individual building rating
Fort Knox	Utilities -some questions on the standards cannot be evaluated properly by the color rating system
Fort Knox	Utilities -Worksheets contain questions that do not apply to the areas in question. Worksheets need to be broken down more for distribution and separate for operations. Inspection sheets have to bee broken down to separate sheets for each utility. To do accurate analysis would have to have separate checklist for each facility on troop side.
Fort Knox	Utilities -If have to go out and inspect each facility it would take minimum of 30 days
Fort Knox	Utilities - Overall rating cannot be determined on the worksheets accurately as there is other information that does not apply to the distribution areas.
Fort Knox	Utilities - Recommend separate worksheets per facility and system
Fort Knox	Utilities - Have in-depth analysis of utility systems using computer program Strategic Utility System Planning. More efficient to look at what is already being done and correlate together
Aberdeen PG	Not all facility components are included in the facility quality rating. (e.g. electrical systems, HVAC, etc.)
Aberdeen PG	Rating on critical item as "red" should not mean facility is "red"
Aberdeen PG	Obsolete types of structures should be excluded
Aberdeen PG	Maintenance and Production Fac. - Not adequately cover utility systems. Too heavy on appearance
Aberdeen PG	Heat/AC-Electric/Gas-Water-Sewer - Do not reflect capability to perform intended functions. Need more explanation. Analysis and maintenance should be critical elements
Aberdeen PG	Information Mgt - Need additional explanation of requirements for CUITN and gateways
Fort Cambell	Standards more cosmetic than structural.
Fort Cambell	Omit handicapped access from some sub-categories.
Fort Cambell	Tailor standards for specific ranges.

Fort Belvoir	Use of interior should not derive conditions of the facility, i.e. availability of a conference room
Fort Belvoir	More emphasis on condition of the infrastructure, adequate utilities, etc.
Fort Belvoir	Instructions not clear, numerous opinions reflected in the evaluation
Fort Belvoir	Add airfield instrumentation (radar, radio beacon, wind indicators, weather packages
Fort Belvoir	Ports: alludes to RO/RO type. Add other types, more detailed in types and requirements
Fort Belvoir	There should be checklist for each utility. Should not include conditions of pump stations, sub-stations, etc., if there is still a requirement to evaluate these facilities separately.
Fort Belvoir	Army Reserve Fac. - Use same checklist for active army. More detail for areas as motor pool and support areas
Fort Belvoir	National Guard Fac. - Same as above.
Fort Belvoir	Need additional FCGs for demolition bunker, permanent retaining/protective walls, etc.
Fort Belvoir	R&D - Availability of conference room should not be a critical element
Fort Belvoir	Family Housing - Kitchens be a critical element in lieu of bedrooms
Fort Belvoir	Hospital/Med. Fac. - There is no reference to the condition of the infrastructure and no explanation as to what is required for the facility to become DOD Certified.
Fort Belvoir	Heat/AC - Should be separate checklists
Fort Belvoir	Electric/Gas - Need separate checklists. No specific reference to Gas.
Fort Belvoir	Water - "Water quality" and "Annual tests performed" should be critical.
Fort Belvoir	Sewer - Pump stations require separate checklist since condition is a critical item on checklist
Fort Belvoir	Put "remarks" section on bottom of every checklist.
Fort Belvoir	Need instructions on the checklist for the evaluator to explain in the remarks section why a category is rated "red"
Fort Belvoir	Add a "N/A" column on the checklist
Fort Belvoir	Put a block for the inspector's phone number on every checklist
Fort Belvoir	Types of facilities to be inspected should be scrutinized.
Fort Belvoir	Need separate checklist for playgrounds
Fort Belvoir	Signature block for each Commander/Director to sign/approve each checklist
Fort Belvoir	Recommend deletion of pictures. This will require individuals to read each of the requirements to ensure a proper evaluation and eliminate "short cuts".

Fort Belvoir	Evaluations are made based on condition of facility at "time of inspection." Inspectors should be instructed that a maintenance problem such as "No HVAC" at time of inspection should not produce a red rating if HVAC is adequate when repaired.
Fort Belvoir	Replace "Air Conditioning" with "HVAC" throughout
Fort Belvoir	Dining Facilities - Doesn't cover serving area or lines. Should be a critical element.
Fort Belvoir	Commissary - Loading Dock should be critical element in lieu of Building Exterior
Fort Belvoir	Transient Housing - Lounge should be critical instead of admin area
Fort Belvoir	Parking checklists does not include any provisions for handicap parking
Fort Belvoir	Most individuals are not familiar with Installation Design Guide and not aware of the specifications outlined in this guide.
Fort Belvoir	Remove landscaping from "parking" checklists, already in "sites and grounds"
Fort Belvoir	Move building utility lines from "loading dock and service areas" to "building exterior"
Fort Belvoir	Operations Building -Conference room should not be critical, supply storage and/or toilets and showers seem more important
Fort Belvoir	General Purp Instr Fac. -Auditorium should not be critical in a "classroom" environment. Substitute lounge and vending areas as critical.
Fort Belvoir	Army Reserve - Add "adequate cabinets and countertops" to kitchen sheet. Critical elements should be kitchen and toilets/showers.
Fort Belvoir	National Guard - Add "adequate cabinets and countertops" to kitchen sheet. Critical elements should be kitchen and toilets/showers.
Fort Belvoir	R&D Building - Picture for "computer facilities" looks more like office in lieu of "main frame CPUs"
Fort Belvoir	Family Housing - Kitchens should be critical in lieu of bedrooms
Fort Belvoir	Majority of standards are easy to understand
Fort Belvoir	Extra check-box on the worksheet for "N/A"
Fort Belvoir	Critical items are not the same on all buildings.
Fort Belvoir	Many used the pictures and ignored the words. Recommend deletion of pictures to force inspectors to read standards
Fort Benning	Expand to address facilities requirements for mobilization
Fort Benning	Trainee Barracks - Graphics needed
Fort Benning	Family Housing - Three choices of rating (G/A/R) are too vague. Rating scale of 1 to 10 would be more precise. Standards too subjective.
Fort Benning	Should have a set of standards specifically for historical facilities
Fort Benning	Range - Recommend a new set of standards for sheds/pavilions for sorting ammo. Recommend two critical items - concrete slab and roof

Fort Benning	Standards address heating, ventilation and air conditioning as one system. Need to distinguish between a central system and separate systems.
Fort Benning	Standards not available for some areas, i.e. recreation boat piers, camper areas.
Fort Benning	Maintenance Fac - more emphasis on cosmetics than on the actual maintenance fac.
Fort Benning	Information Mgt - gateway item needs more specifics to distinguish between automation or telephone gateway
Fort Benning	overall quality rating could be worded "the overall color rating will be either the color rating with the majority of x's, or the lowest color rating of the critical items, whichever has the lower color rating."
Fort Benning	Range stds should include range support buildings
Fort Benning	FH - Three choices (G/A/R) too vague. Choice of 1 to 10 more appropriate.
Fort Benning	Outdoor Sports/Rec Fac - does not include docks
Fort Benning	Recommend news stds for historical facilities
Fort Benning	Recommend vehicle hardstand be assessed using a more appropriate std or not included
Anniston AD	Standards not adequate for industrial installation. Not address functionality. No consideration of items such as crane capacity, layout, process steam, etc.
Anniston AD	Strategic Mobility Fac - RR evaluated in 2 categories, active and inactive. These lump groupings do not adequately evaluate the RR system
Anniston AD	Utility Sys - Utilities lumped together. Need clarification
Anniston AD	Maint/Prod Fac - Aesthetics evaluated, not functionality
Anniston AD	Storage/Warehouse -Appearance not functionality
Anniston AD	Storage/Warehouse - Ammo Storage Igloo/Aprons not included
Anniston AD	Admin Fac - Additional references to layout and functionality would improve the overall evaluation
Anniston AD	Road/Trail - Lumped together. Split up for more accurate.
Anniston AD	Railroad - Lumped together. Split up for more accurate.
Anniston AD	Gen Sup&Stor Fac - Reflect what looks good as opposed to function/purpose
Anniston AD	Electric - Discrepancy with question #4. The number of failures for that length of time should be higher
Anniston AD	Maint Fac - ex. screening of dumpsters, utilities and equipment not practical for the type of work in this building
Anniston AD	Gen Purp Admin Fac - Only one statement to layout. All others are based on aesthetics. Functionality
Anniston AD	Electric - Standards in #9 & #10 do not apply to overhead lines
Anniston AD	Electric - items #7, 9 do not apply to generator fac.
Anniston AD	Railroad - difficult, if not impossible to lump all tracks into one overall quality rating.

Anniston AD	Service Fac - Loading dock std not needed in Fire Prot Fac.
Anniston AD	Gen Purp Instruc Fac -Stds should be changed for Fire Prot Fac Training Site. Lobby not needed. Admin not needed. Auditorium not needed. Classrooms not needed.
Anniston AD	Recreation Fac - club does not have dining room or kitchen, only bar and small dance floor
Anniston AD	Post Exchange- designed for pick up of call-in orders. adequate even though it doesn't have parking area
Fort Gordon	More precision is needed in stds. Words such as "ample", "appropriate" and "adequate" should be better defined
Fort Gordon	Pictures needed
Fort Gordon	Should list primary regs/pubs to give inspectors a source to use in clarifying questions
Fort Gordon	List the FCGs that a stds booklet applies to on the cover
Fort Gordon	Develop stds that apply to any building (i.e. toilet, lobby etc.) Worksheets then have specific items for facilities
Fort Gordon	Suggest numbering the bullets
Redstone Arsenal	Handicap access caused facilities to rate low
Redstone Arsenal	Electric - did not have records back 10 years indicating # of outages
Redstone Arsenal	Add AC on most building stds particularly admin and barracks
Redstone Arsenal	Develop stds specifically for hazardous storage facility
Fort Riley	Need separate stds for hardstand. need separate stds for range hardstand vs. maintenance hardstand
Fort Riley	Incorporate asbestos and radon
Fort Riley	Road stds not specific
Fort Riley	Handicapped places in the standards automatically categorize a building in the red
Fort Riley	Furniture should not be in graphics

APPENDIX J - List of Facility Category Groups (FCGs) being Added to ISR Evaluation Process

This reflects the changes to the list of FCGs that will be evaluated in future ISR implementations:

Individual Weapon Qualification Range Sub-Category

add:	FCG*	17904	Night Fire Range
	FCG*	17906	Known Distance Range
	FCG*	17908	Target Detection Range
	FCG*	17913	Hand Grenade Familiarization Course
	FCG*	17916	Hand Grenade Confidence Course
	FCG*	17918	Recoilless Rifle Range
	FCG*	17919	Light Anti armor Weapon Range
	FCG*	17920	Anti armor Tracking & Live Fire Range
	FCG*	17921	Demo, Booby Trap & Line Mine Area
	FCG*	17922	Flash and Flame thrower Range
	FCG*	17947	Bayonet Assault
	FCG*	17967	Infiltration Course

Major Weapon System Ranges Sub-Category

add:	FCG*	17924	Mortar Scaled Training Range
	FCG*	17925	Mortar Range
	FCG*	17926	Infantry Squad Battle Course
	FCG*	17927	Infantry Platoon Battle Course
	FCG*	17935	Combat Engineer Vehicle Range
	FCG*	17936	Gunship Harmonization Range
	FCG*	17938	Field Artillery Scaled Range
	FCG*	17944	Platoon Defense Against Aircraft

Applied Instruction Facility Sub-Category

add:	FCG*	17112	Flight Simulator Building
	FCG*	17182	Moving Target Simulator Building

Surfaced Roads Sub-Category

add:	FCG*	85120	Vehicle Bridge

Bridges, Unsurfaced Roads, & Tank Trails Sub-Category

delete: Entire Sub-Category (Bridges move to Surfaced Roads Sub-Category; Unsurfaced Roads and Tank Trails are deleted)

Outdoor Sports & Recreation Facilities Sub-category

delete: FCG 75012 Miscellaneous Recreation Facilities
add: FCG* 75012 Basketball Court
FCG* 75018 General Purpose Playground
FCG* 75027 Running Track
FCG* 75040 Golf Course, 18 Hole
FCG* 75041 Golf Course, 9 Hole

Service Facilities Sub-Category

add: FCG* 76010 Museum

Notes:

(1) FCG* means that this is not a true FCG but rather is an individual CATCODE being treated as an FCG for ISR purposes. It is possible that these may be true FCGs in the future

(2) These changes will not require any new Standards or Worksheets (eliminates one set). They will make the automated reports a little longer (due to more FCG lines). New cost factors will be developed for the additional FCGs. The Instruction Manual/AR will list these FCG changes.